

Technical Report 1159

**Cohesion in Sports and Organizational Psychology :
An Annotated Bibliography and Suggestions for U.S.
Army Aviation (1993 to 2003)**

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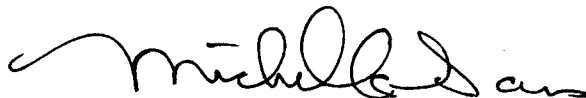
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FOREWORD

Cohesion has long been a core concept in psychology and sociology, and has garnered a great deal of attention in the past decade. Sports researchers have recognized the importance of social cohesion and task cohesion on team performance. Organizations are coming to rely on cohesive teams to improve productivity, customer service, quality, and employee satisfaction. Although the U.S. Army has increasingly viewed cohesion as a key to the success of combat operations, a comprehensive review of the cohesion literature yielded few published studies specifically addressing the construct in military rotary-wing aircrews.

Recently conceptualized as emerging from both the social dynamics at work in the team and the level of goal-oriented task commitment present among team members, cohesion has been extensively addressed by both Sports and Organizational Psychology. The purpose of this review was to examine these bodies of literature from the past decade and to identify a set of characteristics associated with cohesive teams. The aim was to extract the facets of cohesion that can readily be applied to the Army rotary-wing aviation environment. The primary dimensions gleaned from this research are summarized, and a schematic of cohesion generated from these studies' findings is presented. In addition, an annotated bibliography of the key studies from which these dimensions emerged is provided.

The work described here is a product of the Consortium Research Fellows Program and was supervised by the U.S. Army Research Institute for the Behavioral and Social Sciences, Rotary-Wing Aviation Research Unit (ARI-RWARU). The findings were briefed to the ARI-RWARU Chief and unit personnel in September 2003.



MICHELLE SAMS
Technical Director

COHESION IN SPORTS AND ORGANIZATIONAL PSYCHOLOGY: AN ANNOTATED BIBLIOGRAPHY AND SUGGESTIONS FOR U.S. ARMY AVIATION (1993 to 2003)

EXECUTIVE SUMMARY

Research Requirement:

The U.S. Army rotary-wing aviation community depends upon the cohesion of aircrews for safety and mission success. Members of aviation teams must develop and maintain cooperative team relationships, establish shared mental models, monitor workload levels, exchange mission information, and cross monitor each other's performance in order to effectively coordinate their actions. In response to rising human error-related accident rates, the Army is currently revitalizing its Aircrew Coordination Training Program to reinforce the philosophy that flight tasks can be performed more effectively by the coordinated efforts of cohesive crews. Finding few published studies specifically addressing the development of cohesion among rotary-wing military aircrews, the purpose of this review is to examine cohesion in sports and organizational research from the past decade (1993 to 2003). The aim is to extract the facets of cohesion studied by organizational and sports psychologists that can readily be applied to the Army rotary-wing aviation environment.

Procedure:

As part of a larger research and development project aimed at enhancing the Army's Aircrew Coordination Training Program, the researchers conducted an extensive review of the cohesion literature. In addition to team cohesion, the constructs of teamwork, leadership, communication, groupthink, productivity, conflict, and self-efficacy were searched. Research literature was drawn primarily from PsychInfo and the numerous databases managed by EBSCOhost. Numerous informative articles were found in sports and organizational research. The researchers analyzed these studies to determine how cohesive teams are formed and sustained. Suggestions are proposed for U.S. Army rotary-wing aircrews based upon the common findings. The key studies are summarized in an annotated bibliography.

Findings:

The primary dimensions of cohesion gleaned from this review are: (1) Commitment, the degree of loyalty a member holds for the team and team goals; (2) Communication, the exchange of information; (3) Cooperation, the motivation of members to work together in the accomplishment of team goals; and (4) Command, the administrative and managerial role of directing and sustaining teams. Cohesion generally develops in response to the intentional actions of team leaders, particularly in their reinforcement of goals and norms and their emphasis upon ongoing training.

Utilization of Findings:

As the military community places increasing emphasis on group-level decision making, it will be imperative to understand critical team processes and to implement effective strategies for building cohesive teams. The foundation of these strategies should be empirically based and comprehensive, assuring that all necessary and sufficient cohesion dimensions are considered. This report can assist those team-building efforts in the selection of appropriate design and implementation initiatives.

COHESION IN SPORTS AND ORGANIZATIONAL PSYCHOLOGY: AN ANNOTATED
BIBLIOGRAPHY AND SUGGESTIONS FOR U.S. ARMY AVIATION (1993 to 2003)

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COHESION IN SPORTS AND ORGANIZATIONAL PSYCHOLOGY:
AN ANNOTATED BIBLIOGRAPHY AND SUGGESTIONS FOR U.S. ARMY AVIATION
(1993 to 2003)

Introduction

Cohesion has garnered much research attention in the past decade. Cohesion is generally assumed to increase productivity (e.g., Carron, Colman, Wheeler, & Stevens, 2002; Oliver, Harman, Hoover, Hayes, & Pandhi, 2000). Organizational teams rely upon cohesion-building strategies because they are increasingly responsible for accomplishing production goals and providing customer service, but they also must manage team member concerns such as individual satisfaction with the team (Salas, Burke, & Cannon-Bowers, 2000). Sports research has centered on identifying methods for enhancing cohesion within teams requiring a high degree of member interaction in order to be successful. A primary contribution by both fields of research is an understanding that cohesion is a multidimensional construct and that cohesion emerges from the interaction of social and task dynamics at work within the team (e.g., Boone & Beitel, 1997). Deficiencies in addressing the dynamics related to cohesion can result in lost productivity and withdrawal behavior from the team. Similarly, the U.S. Army has recognized that cohesion in military units is key to mission success (e.g., Siebold, 1999) and may affect other team dimensions including retention efforts (McClure & Broughton, 1998).

The significant interest in cohesion in recent years has resulted in new approaches of conceptualizing cohesion (Dion, 2000). Definitions of cohesion have evolved to include members' commitment to team goals and the ability of a team to meet members' affective needs, such as trust and confidence (Carron, Brawley, & Widmeyer, 1998). Cohesion can be conceptualized as emerging from both the social dynamics at work in the team and the level of goal-oriented task commitment present among team members (Cota, Evans, Dion, Kilik, & Longman, 1995).

Purpose

ARI began in 2000 to conduct research that responded to the Army's need for an enhanced Aircrew Coordination Training Program to help reduce crew-related errors. The prototype web-based training system that emerged from this effort was designed to facilitate the *crew concept*. That is, the training program emphasizes the philosophy that each flight task can be performed more effectively by the coordinated efforts of each crewmember (Katz & Grubb, 2003).

The purpose of this review was to examine the organizational psychology and sports psychology literature published between 1993 and 2003 to identify a set of characteristics associated with cohesive teams. The fields of organizational and sports psychology were selected because they share certain premises for building cohesion (Katz & Koenig, 2001) and there has been a recognition that some principles identified as conducive for producing effective and productive teams are exportable to the military environment (e.g., Popper, 1996). The integration of these principles can serve to enhance team performance in the rotary-wing cockpit

since this unique environment has a micro-organizational climate and relies upon interdependent teamwork for mission success and crew safety (Salas, Burke, & Samman, 2001).

The aim is to extract the facets of cohesion studied by organizational and sports psychologists that can be applied to the Army rotary-wing aviation environment. The primary dimensions gleaned from this research are summarized below, and the appendices provide an annotated bibliography of the key studies from which these dimensions emerged. In addition, the review of these bodies of research led to the generation of a four-dimension schematic of cohesion that might help in understanding how cohesion can most effectively be developed and maintained in Army rotary-wing aircrews.

Method

In considering the role that cohesion might play in the ability of aircrews to coordinate their actions, ARI conducted an extensive review of the peer-reviewed literature in this area. The review of the literature included a search of *EBSCOHOST*, *PSYCHINFO*, and *DTIC*. *EBSCOHOST* provides an exhaustive listing of research pertaining to cohesion from the fields of sports, business, social psychology, academia, and the military. *PSYCHINFO* reports psychological and social science research. The Defense Technical Information Center (DTIC) provides technical reports and other government documents. Table 1 presents the list of keywords that were used in this bibliography.

Table 1.

List of keywords

Teamwork or Cohesion and ...

leadership	communication	decision-making
member conflict	groupthink	performance
commitment	productivity	crew coordination
feedback	attractability	mental models
performance outcomes	organizational commitment	social loafing
interpersonal trust	team efficacy	team cohesion
social cohesion	member diversity	performance monitoring
work team	cooperation	

The annotated bibliography provides a representative sample of the organizational and sports research from 1993 to 2003 that is applicable to the military cockpit. Research has noted that aircrews are unique teams given the highly technical environment and high risk factors that are associated with them (Salas et al., 2001). The behavioral markers (e.g., communication, decision-making, leadership) in current crew coordination training (e.g., crew resource management) established the determination of applicability. The body of research available on cohesion was not exhausted by this annotated bibliography, but the large sample of information

provided appears to adequately represent the majority of relevant information that is available. The majority of the studies cited present an integrated pattern of various dimensions that seem to function cooperatively in forming cohesiveness in teams. Further, we found that most of these dimensions can be categorized under at least one of four general characteristics related to cohesion. These dimensions include *commitment*, *communication*, *cooperation*, and *command*. Table 2 provides a brief description of how these terms are defined in this report.

Table 2.

The four dimensions of cohesion

• <i>Commitment</i>	The level of loyalty a member holds for the team and team goals.
• <i>Communication</i>	The clear exchange of information
• <i>Cooperation</i>	The motivation to work together in the accomplishment of team goals.
• <i>Command</i>	The administrative and managerial role of directing and maintaining teams as they progress in accomplishing established goals.

We have attempted to provide an informative summary of the relevant findings that are available. A cross-section of sources is used reflecting various dimensions of organizational and sports topics related to cohesion. The following section presents the findings of the review first summarizing the key findings from organizational and sports research and then discussing the four dimensions of cohesion defined in Table 2. Application will be made to Army aviation with a comparison chart between the four dimensions cited in this review and the Army's Crew Coordination Objectives. A discussion section notes limitations and suggests future research possibilities. Finally, the annotated bibliography consists of four sections presenting research findings pertinent to each of the four dimensions.

Findings

The volume of research related to cohesion and performance is considerable for organizational psychology and less numerous for sports psychology. However, both organizational and sports research have found similarities in the cohesion-building behaviors of teams (Katz & Koenig, 2001; Weinberg & McDermott, 2002). While the volume of the data might be considerable, basic themes emerge and are often replicated across diverse applications. Constructing a four-dimension schematic is an attempt at providing an efficient means to organize, evaluate, and present the data. Additionally, the potential relevance of this framework for Army aircrew cohesion will be suggested.

Organizational Research

Organizational teams are becoming very popular (e.g., Jones & Roelofsma, 2000) and are used to improve productivity, customer service, and quality while improving member satisfaction (Guzzo, 1995). One random sample of U.S. organizations found that 48% report

using work-teams for product development or production (Devine & Clayton, 1999). Cohesion has become a focal issue for these organizations as they endeavor to increase productivity. For example, cohesion improves creativity in decision-making (Moore, 1997) and produces outcomes that exceed the capabilities of individuals working alone (Hamilton, Nickerson, & Owan, 2003; Marks, Mathieu, & Zaccaro, 2001). Cohesion combines member differences so that strengths and weaknesses cooperatively work for the benefit of the team.

While the importance of the relationship between cohesion and performance (Mullen & Cooper, 1994) continues to be recognized, the ability to settle on one definition (Salas et al., 2000) and measurement of cohesion has been difficult. Historically, cohesion has been described in terms of mystical forces that prompted teams to reign victorious over overwhelming odds (Siebold, 1999). In time the scientific community determined that cohesion can best be conceptualized as a multidimensional construct consisting of numerous factors representing interpersonal and task dynamics (Carless & de Paola, 2000; Dion, 2000). Beyond this effort organizations have sought to find the most efficient method of conceptualizing cohesion (Cota et al., 1995) and identifying teamwork principles that can be exported (Salas et al., 2000). Foremost in this effort is the understanding that improving morale and positive team attributions will likely result in greater cohesion (Dion, 2000).

Organizational psychologists are faced with the task of determining how cohesion can be created and maintained within organizational teams. Building upon a multidimensional description of cohesion, the solutions appear to be found in an integrative strategy that stresses team commitment, effective communication, functional cooperation, and quality leadership. Team commitment likely increases if the organization seeks to address member concerns on the team level (e.g., Rhoades & Eisenberger, 2002; van Knippenberg & van Schie, 2000). Effective communication involves encouraging the flow of information (e.g., Lawler, Thye, & Yoon, 2000). Functional cooperation includes the ongoing maintenance of interpersonal relationships within the team (e.g., Austin, 1997; Watson, Johnson, Kumar, & Critelli, 1999). Finally, the degree of cohesion that develops will be determined by the leadership quality present within the team (e.g., Dickson, Smith, Grojean, & Ehrhart, 2001).

Army aircrews can be considered small teams that operate in highly sophisticated organizational environments according to standard operating procedures, experience frequent changes in operating conditions, and experience risks directly related to their performance (Salas et al., 2001). Salas et al. (2001) note that aircrews are highly specialized teams made of skilled members that work together interdependently towards common goals (Paris, Salas, & Cannon-Bowers, 2000). They typically confront ambiguous information and operate in environments with changing task conditions, time pressure, and high stress (Jones & Roelofsma, 2000). Army aircrews possess special needs in terms of leadership and coordination in order to function successfully (Salas, Fowlkes, Stout, Milanovich, & Prince, 1999). Organizational research can provide insights into how to improve cohesion in teams, such as Army aircrews, while giving consideration to the unique environment in which these teams function.

Sports psychology has long recognized the value of cohesion in sports teams (Carron & Brawley, 2000). Carron et al. (2002) report meta-analytical support for the cohesion-performance relationship in sports. Widmeyer, Carron, and Brawley (1993) found in their review of sports research that 83% of investigations reported a positive relationship between cohesion and performance. Though mediated by the quality of coaching (NuFarch & Omar-Fauzee, 2003) and by team size (Carron & Spink, 1995), the relationship between cohesion and sports team performance is significant regardless of whether the team is interacting (e.g., soccer) or coactive, as in swimming (Holt & Sparkes, 2001).

This relationship between cohesion and performance has resulted in significant research into how cohesion can be fostered in sports teams. The research has focused on topics such as the relationship between cohesion and: a) team efficacy (Eys & Carron, 2001); b) intrateam conflict (Sullivan & Feltz, 2001); c) work output (Prapavessis & Carron, 1997); and d) win/loss record (Boone & Beitel, 1997). Holt and Sparkes (2001) report that high cohesion has been found to increase team social and task interactions, to reduce performance anxiety, and to improve player commitment to the team. Findings such as these lend support to a multidimensional approach to cohesion (Carron & Brawley, 2000) and highlight the need for identifying team-building behaviors that seem to work among most types of teams (Voight & Callaghan, 2001).

A second important contribution of sports research in cohesion is the team-building data that have been gathered. Team-building is a purposeful process of practicing behaviors within the team that encourage individual bonding with team members and with team goals (Voight & Callaghan, 2001). The coach's leadership style and behaviors modeled to the team will likely serve to direct team-building efforts (Turman, 2003). Coaching styles exert a tremendous influence upon the team-building effort and can hinder progress if the style does not fit the organizational and cultural expectations of the team. Evidence exists that team-building is most effective when it includes social bonding activities (e.g., personal growth experiences, social gatherings apart from the sport) and task-focused objectives such as goal setting and communication (Carron et al., 2002).

The research suggests that cohesion is likely to develop in teams where certain behaviors are modeled by the coach and practiced by the team. Commitment to the team can be encouraged through inviting member collaboration in goal setting and decision-making (Widmeyer & Ducharme, 1997). Communication is a critical feature within the team and studies have found that how the coach communicates with the team can deter or promote cohesion (Turman, 2003). Cooperation is possible as member contributions to the team are recognized and the member practices role-development strategies that provide a task focus and necessitate interpersonal interaction with other team members (Ryska, Yin, Cooley, & Ginn, 1999). Command in sports teams acknowledges that leadership plays a significant role in the development of cohesion (Gardner, Shields, Bredemeier, & Bostrom, 1996).

Army aviation shares similarities with sports teams in that both are task-oriented, rely on interdependent teamwork, and seek to mitigate poor performance through practice drills. Much

of the sports research focuses on the horizontal teamwork issues at work within the team and that generally have the most direct link with team outcomes (e.g., Carron et al., 2003). The team-building data (e.g., role clarity, open communication) appears to merit consideration among aircrews since similar behaviors have been cited as conducive for optimizing teamwork in the cockpit (Salas et al., 2001).

Four Dimensions of Cohesion

A review of the literature from organizational and sports psychology related to cohesion covers numerous topics. We have reduced the bulk of this information to four dimensions. These four dimensions are *commitment*, *communication*, *cooperation*, and *command*. Our approach presumes that cohesion is a multidimensional construct that reflects task and social dynamics (Bernthal & Insko, 1993). These four dimensions exert integrative influences upon the task and social dynamics at work within teams.

Commitment

Commitment has historically served as a focal point of cohesion studies. Successful teams need the commitment of members to ensure maximum participation. The outcome of maintaining member commitment influences job perceptions (e.g., satisfaction, motivation, involvement) (van Knippenberg, & van Schie, 2000) and the willingness of the individual to work sacrificially for the welfare of the organization (Dessler, 1999). Military research has found that commitment is an individual-level characteristic that can improve cohesion when the individuals value the group and are willing to subordinate their goals to it (Yagil, 1995). Attractability, nature of interactions, confidence levels, and trust appear to be significant concerns in making commitment decisions.

Attractability is based upon the individual's assessment of membership desirability. These assessments are generally made early in the recruitment process as the individual considers the benefits to be gained and weighs the costs of membership (Hogg & Abrams, 1993). The level of congruence between individual expectations and group characteristics prompts cognitive and affective assessments of membership desirability (Carron, Brawley, & Widmeyer, 1998). In short, attractability is determined by perceptions that membership will lead to meeting personal goals, provide desirable rewards, and will likely improve status (Lembke & Wilson, 1998).

The nature of interactions influences the level of cohesion that will be maintained over the life span of the team. Positive interactions increase commitment and the likelihood that future interactions will occur, leading to cohesion (Lawler, 2001). Negative interactions or team failures can cause commitment to diminish leading to flawed decision-making that will likely diminish productivity (Keyton, 1999). A task of leadership is to manage the interpersonal climate of the team. There may be conflict and some conflict can be healthy if diverse views improve decision-making. However, unresolved interpersonal conflict must be addressed or members will begin to withdraw effort from the team.

Confidence, in the ability of an individual or group to be successful, can nurture commitment. Individuals are more likely to commit to teams they believe will be successful

(Bandura, 1997). Small victories have the ability to reinforce and strengthen confidence levels (Kozub & McDonnell, 2000). A bi-product of high confidence in a team's ability to succeed is synergy, where team output exceeds what members could achieve working noncollaboratively (Lawford, 2003). Organizations contribute to increased confidence by demonstrating commitment to individual development (Goh, 1998) and team resourcing. Ultimately, beliefs about a team's potential will rise or fall based upon the level of trust the individual holds for the team, leadership, and the organization (Dessler, 1999; Erdem & Ozen, 2003).

Trust can play an important role in maintaining commitment. Perceptions of organizational commitment to the individual in terms of fairness and demonstrating concern for employee welfare can provide motivation for employee to commitment to organizational membership (Tang & Serfield-Baldwin, 1996). Interpersonal trust encourages team commitment and participation in achieving team goals. A loss of trust often results in diminished commitment and a gradual reduction in participation.

When threats to commitment exist, the frequent result will likely be some form of withdrawal behavior (Karau & Williams, 1995). Withdrawal can be covert in the form of reduced effort or overt through self-selected attrition. Teams losing commitment typically lose task focus and focus on social dynamics instead. Low commitment teams often experience factions within the team, losing cohesion and productivity. Potential threats to commitment include negative interactions, rebellion, threats to status, and attrition.

Negative interactions have the potential to diminish team commitment. Lawler et al. (2000) propose that commitment and cohesion develop through positive interactions over time. Negative interactions can occur between team leadership and personnel or it can emerge between members. The presence of persistent conflict, poor perceived support, or perceptions of injustice often results in negative attributions to teams. Weak leadership can contribute to negative perceptions when a member seeks to usurp control over the team by refocusing team communication on his or her actions rather than on team tasks (Keyton, 1999). Common responses to negative associations with teams include the creation of factions, confusion over goals, and withdrawal.

There appears to be an emergent breakdown of commitment when employees perceive low vertical or organizational commitment and support. One survey of U.S. organizations found that employee perceptions of low organizational commitment can be accurate as a majority of organizations reported low commitment to team-level support as in providing effective feedback (Devine & Clayton, 1999). Status support can be another concern since people normally commit to teams that promise to provide desired rewards and improve personal status (Lembke & Wilson, 1998). Risks to status can diminish cohesion and prompt the adoption of alternative goals when individuals perceive that a team is likely to fail at meeting goals or at delivering expected rewards (Boone & Beitel, 1997).

Conversely, positive perceptions of organizational support appear to increase affective commitment to the organization and reduce the probability of employee withdrawal behavior (Rhoades, Eisenberger, & Armeli, 2001). Team leaders face the challenge of modeling behaviors that convey vertical support for the team from the sponsoring organization and from

the team leader. Part of this challenge is to monitor member relationships so that persistent conflict can be avoided. Team goals need to be reinforced. Success needs to be celebrated. Distinctive and sacrificial service should be recognized.

Attrition can pose a problem for maintaining commitment. Schneider and Goldstein (1995) propose that individuals experience an attraction-selection-attrition (ASA) cycle in terms of membership in organizations that is based upon the individual's perception that his or her personal characteristics and values align with the characteristics and values of the organization. The assumption of ASA is that if the characteristics and values of the individual and the organization begin to differ the individual will seek to withdraw from the organization. While this theory was later expanded to allow for individuals to manipulate their work environment to make it more desirable, the basic premise remains that when incongruence is experienced the member will begin to react ultimately to the point of leaving.

Maintaining member commitment to the team can be a challenge since commitment and cohesion levels can fluctuate over time (Bartone & Adler, 2000). Familiarity can promote a degree of natural bonding when individuals are in close proximity, collaborating on a task, and the interactions are proving positive. The natural bonding over time leads group members to begin adopting mutual goals, norms, and values (Hogg & Abrams, 1993). However, the strength of this natural bond is weak because it will primarily represent social connection. Task role expectations are also needed to provide the team a sense of purpose that exceeds the social dynamics of the group. Encouraging frequent social exchanges and rehearsing task-role behavior provides the team with clarity and direction (Lawler et al., 2000; Mudrack & Farrell, 1996).

Bolstering commitment generally involves behaviors that welcome member input and demonstrate commitment to the welfare of the team and team members (Rhoades & Eisenberger, 2002; Rhoades et al., 2001). Emphasizing the value of member input can mitigate the negative influence of team failures (Greenless, Graydon, & Maynard, 1999; Shepperd & Taylor, 1999). Member input in decision-making and goal-setting can increase identification with team goals (Prapavessis & Carron, 1997). Identification with goals (Prapavessis & Carron, 1997) and performing team roles (Eys & Carron, 2001) enhance commitment as their value and importance are reinforced in the team. Monitoring progress towards accomplishing team goals allows for task adjustments and opportunities to reward success (Widmeyer & Ducharme, 1997). The result is belief in the team's ability to be successful (Kozub & McDonnell, 2000) and bonding between team members leading to improved team performance and outcomes (Bray & Whaley, 2001).

The commitment literature is applicable to Army aircrews because they rely upon effective interactions between crewmembers. Aviation research findings (Rasker, Post, and Schraagen, 2000) illustrate the importance of commitment because effective aircrew behavior requires a high frequency of interactions. The unfortunate outcome of poor commitment in the cockpit is the potential for otherwise avoidable mishaps due to human error (Merritt, 1995).

Communication

Organizational and sports psychology recognize the importance of communication on cohesion and performance (Weinberg & McDermott, 2002). Research has generally supported the belief that clear communication is essential for cohesive teams (e.g., Cohen, Mohrman, & Mohrman, Jr., 1999; Pollack, 1998). Communication is the primary vehicle that enables the exchange of information and allows the team to make adjustments as changing conditions dictate. Effective communication serves an affective purpose by creating feelings of belonging to the group (Pollack, 1998), which some have suggested is a consideration when devising ways to improve morale (Dion, 2000). Three primary functions of communication are to provide feedback, create shared mental models, and enable decision-making.

Feedback builds cohesion by providing evaluation of past performance so that success can be recognized and adjustments can be made leading to increased productivity. Whether feedback is providing briefings and evaluations or through real-time performance monitoring, feedback supplies team members with an appraisal of their performance so that future performance can be maximized (Marks & Panzer, 2004). Feedback mitigates risks and faulty decisions that could harm the team (Mearns, Flin, & O'Connor, 2001). The nature of feedback is an important consideration as negative initial performance feedback has been linked to future increases in task and relationship conflicts (Peterson & Behfar, 2003).

Shared mental models are knowledge structures that enable team members to anticipate the responses of other team members during times of stress when direct communication typically decreases (Cannon-Bowers, Salas, & Converse, 1993). The interpretations, cues, and language structures form an intrateam system of implicit communication. Implicit communication enables accuracy in interpreting verbal and nonverbal communication that occurs within the team. Implicit coordination develops through repeated interactions, cross-training, team self-correction, and debriefings (Salas et al., 2001) as member input and feedback are welcomed (Rasker et al., 2000). An outcome of implicit communication will be the gradual creation of implicit coordination where member behaviors under times of stress can be anticipated and augmented if need be (Cannon-Bowers et al., 1993).

Decision-making is an important function of communication (Hollenbeck, Ilgen, LePine, Colquitt, & Hedlund, 1998). As work conditions change teams often need to reassess how they are functioning. Salas et al. (2000) suggest that decision-making, like that within aircrews, is based upon situational cues from similar situations in the past. Decisions made under these urgency conditions are not error free and the level of cohesion within the team does appear to influence the quality of decision-making. High task-cohesive teams have been found to devote more time to planning and to communicate more task-relevant information during team performance (Zaccaro, Gualtieri, & Miolonis, 1995).

Obstacles to communication can detract from the team's ability to convey information. Miscommunication or poor communication can diminish the team's performance and create intrateam factions (Turman, 2003). Poor communication reduces clarity and forces members to rely upon assumptions, inferences, or indirect communication in conveying information to other team members (Mortensen, 1997). The effects of these communication constraints can vary

from missed production goals in organizations to the loss of life and equipment in aviation. Potential threats to team communication include communication constraints and groupthink.

Communication constraints, such as *saving face* (Brown & Levinson, 1987), diminish communication efficacy. The desire to appear competent and to protect the image of others can prompt communication constraints. Individuals with personality traits or cultural values that promote compliance and teams with rigid status boundaries are likely to be susceptible to communication constraints at the expense of decision-making. Other potential threats to face include rebuttals, criticism, or the failure to successfully negotiate interpersonal boundaries when communicating with others (Petronio, Ellemers, Giles, and Gallois, 1998). These boundaries can be formidable obstacles in organizations and detrimental to cockpit communication (Merritt, 1995).

Another communication problem is related to excessive social cohesion and the desire for concurrence of opinion as a primary goal, frequently called groupthink (Bernthal & Insko, 1993; Street, 1997). Groupthink can produce an emerging over-optimism in the invulnerability of the team coupled with increasing pressure on member conformity (Chen & Lawson, 1996). Key antecedents of groupthink have pointed to high social cohesion, structural faults in the organization (e.g., team isolation, inadequate norms, poor leadership), and a provocative situational context marked by high stress and low perceived member support (Hodson & Sorrentino, 1997). Hogg and Hains (1998) suggest that some degree of groupthink is a normal developmental phenomenon due to social attraction and the normal process of self-categorization as the individual aligns with group goals and experiences group ethnocentrism.

Groupthink, as a developmental phenomenon, can serve a negative or positive influence on the team. It can have a negative influence if it detracts from quality decision-making or restricts critical feedback (Bernthal & Insko, 1993). Conversely, groupthink can serve a positive role when over-optimism reduces self-censorship resulting in the exchange of more counter arguments and opinions in the pursuit of goals (Chen & Lawson, 1996). A key influence in the positive or negative direction of groupthink is the style of team leadership. Directive leaders are frequently resistant to collaborative decision-making and have been found to lead teams that are more susceptible to groupthink, discuss fewer facts, and make poorer decisions than teams led by participative leaders (Ahlfinger & Esser, 2001). Effective leaders can mitigate the negative effect of groupthink by encouraging open inquiry in decision-making and seeking a quality solution rather than group consensus (Chen & Lawson, 1996).

Teams do not need to sacrifice social cohesion in order to avoid the negative influence of groupthink (Bernthal and Insko, 1993). Rather, certain procedures need to be observed as the team functions. These include reinforcing the team's purpose, engaging in performance monitoring including feedback from outside observers, and composing teams with individuals with different skills and backgrounds. Maintaining task-relevant communication strategies is imperative since the information handled by a team at any given moment is likely to only be representative of the whole body of information available and that will be required (Houghton, Simon, Aquino, & Goldberg, 2000). Teamthink has been suggested as an alternative to groupthink and includes behaviors such as open expression of divergent views, situational awareness, and recognition of member contributions (Manz & Neck, 1995).

Team communication can be enhanced through adequate training. Training needs to address the factors that contribute to communication constraints. Research supports training in assertiveness to overcome personality or temperament characteristics that cultivate compliance rather than discussing differing opinions (Anderson & Martin, 1999). Teams need to receive constructive feedback in numerous forms including debriefings, performance evaluations, and performance monitoring. Training should include practicing communication so that direct and indirect communication will more likely be interpreted correctly. Merritt (1995) concludes that some degree of communication constraint will likely always be present so training needs to encourage openness and familiarity.

Aircrews are not immune to communication problems (Kanki & Palmer, 1993). Studies have found that aircrews can experience constrained communication when members are seeking to protect their personal image of competency or they resist posing a threat to the competency of other crewmembers by providing critical feedback or questioning the decision of the team (Merritt, 1995). Communication constraints often emerge under high stress conditions when other crewmembers are open to input, but the risks to image motivate the member to remain guarded in his or her communication or uncommunicative (Merritt, 1995). So, aircrews, like other organizational teams, must find ways to mitigate this reluctance to share information.

Cooperation

Cooperation is often used as a description of coordination that develops when members gain experience interacting as they work together on tasks (Carless & de Paola, 2000; Lawler et al., 2000). In some respects cooperation is a developmental process beginning with identification with the team and proceeding as the member's role develops within the team (Hogg & Abrams, 1993). The assumption is that members continue to exert energy in developing their team roles because past team experience has resulted in affective satisfaction with the team (Lawler, 2001).

Research has found that a relationship exists between perceptions of cooperation and the shared beliefs that develop within the team as members interact (Carron et al., 2003). For example, perceptions of cooperation have been linked to player perceptions of task commitment and perceived effort among male hockey players (Spink & Odnokon, 2001). The organizational contexts and cultures of these teams can influence the beliefs and expectations that develop (Gibson & Zellmer-Bruhn, 2001). Cooperation, then, creates a circular cohesion-building cycle: cooperative member experience with the team results in beliefs that the team offers a positive affiliation, that the team will likely be successful, and that cohesion is present. The true benefit of cohesion on performance might suggest that cohesion is an antecedent to enhanced performance rather than a bi-product (Chang & Bordia, 2001).

Promoting cooperative teamwork is one of the strategies for improving team efficacy (Jordan, Field, & Armenakis, 2002). Effective teams commonly share a sense of confidence that the team can collectively perform a task or mission well (Zaccaro, Blair, Peterson, & Zazanis, 1995). The research suggests that higher collective efficacy enhances the likelihood that

members will provide the investment necessary to succeed at difficult tasks and will perform better under stress conditions (Zaccaro, Rittman, & Marks, 2001).

Cooperation problems generally emerge when social cohesion has become unhealthy and task cohesion diminishes. Zaccaro et al. (1995) illustrate the high cost of losing task cohesion as they found that teams with high task cohesion outperformed low cohesion teams under temporal urgency conditions. Their performance matched or bettered teams not experiencing temporal urgency. Potential sources of cooperation problems within the team include member diversity, withdrawal of member effort, and member conflicts.

Member diversity increasingly characterizes organizational and sports teams (Knouse & Dansby, 1999) and can be a distraction unless managed properly (Webber & Donahue, 2001). Part of managing diversity regardless of the type of team is to maintain task focus (Knouse, Smith, & Smith, 1998). Research has found that well-managed teams will experience a change in the way diversity is perceived from surface-level (e.g., race, gender) to deep-level (e.g., attitudes, beliefs) as members interact over time (Harrison, Price, & Bell, 1998). As diverse groups develop interdependence they often begin to reap the benefits of diverse backgrounds while reducing the need to inhibit communication (Sargent & Sue-Chan, 2001). Decision-making and creativity can benefit from the collaborative input of varied experiences (Moore, 1997). A potentially negative effect of diversity is the creation of subgroups within the team if members fail to develop a sense of group identity (Elsass & Graves, 1997).

Cooperation can diminish if members perceive team dynamics negatively. Karau and colleagues (e.g., Karau & Hart, 1998; Karau & Williams, 1995) offer that disgruntled team members can covertly withdraw effort in the team while overtly remaining a member. As team characteristics change (e.g., size, personnel) the input level of members can lower if they lose task focus or perceive injustice within the team (Karau & Hart, 1998). Members are motivated to remain engaged in the team process when they hold the belief that team outcomes depend upon the efforts of team members and that the outcomes are of personal value (Shepperd & Taylor, 1999; Smith, Kerr, Markus, & Stasson, 2001). Problems with team leadership can detract from cooperation (Keyton, 1999). Strategies for maintaining member involvement include reinforcing team goals, fostering a sense of belonging to the group, and creating a sense of value in team outcomes that the individual will value personally (Karau & Williams, 1995).

Member conflicts can diminish cooperation because they generally reduce job satisfaction and create interpersonal tension within the team (Hodson, 1997; Sullivan & Feltz, 2001). Further, conflicts can lead to other negative team dynamics such as competition, ineffective communication, and mistrust. Ultimately, conflicts often result in poor problem-solving, low productivity, and poor coordination (Rempel & Fisher, 1997). Mitigating conflicts requires commitment to the team and a team policy that effectively addresses conflicts when they arise (Griffith, 2002).

Improving member cooperation requires teamwork strategies that motivate effort towards meeting team goals rather than focusing on personal goals (Gammage, Carron, & Eastabrooks, 2001). The presence of incentives and performance rewards can motivate cooperation (Hamilton, Nickerson, & Owan, 2003). Team outcomes that are personally meaningful are more

likely to motivate cooperation and maintain member involvement in the team process (Shepperd & Taylor, 1999; Smith, Kerr, Markus, & Stasson, 2001). Fostering positive member interactions is crucial (Lawler et al., 2000). Research has found that performance is linked both to skills related to the technical aspects of the task and to teamwork competencies associated with being a good team member (Cannon-Bowers & Salas, 1998).

Aircrews rely upon cooperative effort in order to function effectively (MacMillan, Entin, Entin, & Serfaty, 1994). Army aircrews function in a complex environment where frequent information exchanges are necessitated (Salas et al., 2001). Coordination in these teams involves creating compatible knowledge structures that enable information to be exchanged without being asked (Cannon-Bowers, Salas, & Converse, 1993; Grubb, Simon, Leedom, & Zeller, 1995). Equally important is ongoing training and rehearsal of flight procedures and solutions (Salas et al., 2001). As crews gain experience working together their level of cooperation will increase and these crews have been found to perform better than teams lacking experience.

Command

All functional teams have some form of governance responsible for maintaining team goals, enforcing norms, and setting the team's direction. Leadership or command embodies multifaceted tasks, but at its core, leadership is an interpersonal process (Popper, 1996). Leadership can be formal (organizationally appointed) or informal, emerging from within the team (e.g., Pescosolido, 2001). Informal leaders can diminish productivity, but this reaction is not inevitable if they remain task focused (Neubert, 1999).

Team leadership bears considerable responsibility for managing the various aspects related to team functioning such as information, personnel, and material resources (Zaccaro et al., 2001). Effective team leaders are problem solvers (Zaccaro et al., 2001) including resolving interpersonal problems within the team (Hirokawa, DeGooyer, & Valde, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). With effective team leadership, member capabilities are identified, developed, and integrated with interaction skills that will lead to success (Kozlowski, Gully, Salas, & Cannon-Bowers (1996). In fact, research suggests that the presence of leader social support can determine the team's reaction to high workload conditions (Bliese & Castro, 1999).

Identifying specific leadership behaviors that are applicable to all team contexts is difficult since requirements will likely vary for each situation (Mumford, Zaccaro, Connelly, & Marks, 2000). However, some generalities can be cited. For instance, leader personality can potentially influence the leader-follower relationship regardless of the team context (Thomas, Dickson, & Bliese, 2001). Effective leadership seems to function on a cognitive (Bass, Avolio, Jung, & Berson, 2003), interpersonal (Popper, 1996), and an affective level (Bass et al., 2003). Effective leadership functions best when leaders demonstrate competencies and provide appropriate feedback that meet cognitive needs while providing support and expressions of concern for member needs on an affective level.

Leaders contribute in establishing the quality of teamwork and cohesion that will emerge by the behaviors they model. For example, leaders influence norms related to ethical behavior

by the ethics they demonstrate in their behavior (Deluga, 1995). Similarly, leaders can shape the degree of collaborative teamwork that develops within a team by their willingness to encourage collaboration in tasks such as planning (Hoegl & Gemuenden, 2001). Leaders commonly assume the task of encouraging a sense of belonging to the team (Gilbert & Tang, 1998) and they can be successful by practicing simple behaviors such as learning to be good listeners when their followers provide input (Johnson & Bechler, 1998). The influence of leadership on cohesion can be seen in the leader's reaction to stress or time pressure, the leader's commitment to team-building behavior, and the level of morale or collective efficacy maintained in the team (Klein, 1996).

Leadership styles can influence the cohesion that develops within teams. Descriptions of leadership styles typically reflect some link with personality traits (Church & Wacławski, 1998) and behavioral characteristics that reflect diverse strategies for motivating individuals to pursue team goals. Two styles of leadership - *transactional* and *transformational* - have gained popularity in military research (e.g., Behling & McFillen, 1996; Dvir, Eden, Avolio, & Shamir, 2002). Bass et al., (2003) describe transactional leadership as an exchange model of providing rewards in response to obedience and team outcomes. This style is often described as autocratic and popular in military teams. Transactional leadership is an effective introductory style of leadership for newly created teams or with teams constructed for brief task assignments.

Transformational leadership builds upon transactional leadership as leaders motivate followers to commit to the team regardless of contingent rewards (Bass et al., 2003). These leaders inspire trust in the team or organization and seek to promote identification with the team's values, mission, and vision (Popper, 1996). Dvir et al., (2002) offer that transformational leadership is based upon a conceptual framework that motivates through satisfying the higher level needs (e.g., self-actualization) of followers, morally lifts the team to transcend self-interest, and seeks to develop a sense of empowerment within followers. In addition to empowerment, transformational leadership enhances follower inspiration, commitment to the task, and efficacy beliefs about the team (Behling & McFillen, 1996).

The purposeful team-building behaviors of team leadership exert a large impact on the development of cohesion (Voight & Callaghan, 2001). Specific strategies that will be effective can vary depending upon the expectations and cultural values of team members (Ryska et al., 1999). However, behaviors typically productive in building cohesion include providing ongoing training, encouraging collaborative decision-making, promoting feedback, and providing social support for the team (Shields & Gardner, 1997). Cohesive teams commonly construct and utilize mental models that produce expectations of how members will respond to varying team conditions (Druskat & Pescosolido, 2002). Turman (2003) found that behaviors such as inequity, embarrassment, and ridicule deter cohesion while humor, motivational speeches, quality opponents, dedication, and team prayer serve to promote cohesion.

Problems arise when informal leaders seek to replace designated leadership. The mixture of poor leadership and poor organizational governance can provide the opportunity for informal leaders to seek control of the team (Keyton, 1999). Leaders can avoid dysfunctional behavior in teams by stressing roles, goals, norms, and task-oriented activity. Leaders can bolster their position by demonstrating task competency and concern for followers. Ongoing training needs

to be consistently available to the team. Leaders need to be aware of the social dynamics at work within the team and address problems of overt disagreement or covert withdrawal of participation.

A Four-Dimension Schematic for U.S. Army Aviation

Four Dimensions of Cohesion

In the 1980's, commercial and military aviation mishap trends revealed the inability of many aviators to work well together in periods of high stress or workload (Helmreich, Merritt, & Wilhelm, 1999). A review of Army aviation accidents from 1984 to 1989 implicated crew error as a contributing factor in accidents that had cost the Army 147 lives and over \$292 million in resources (Peusch & Hicks, 2001). Consequently, the aviation communities instituted teamwork-focused training, emphasizing the core behaviors believed to facilitate effective coordination among aircrew members.

Crew Resource Management (CRM; Wiener, Kanki, & Helmreich, 1993) has become one of the most widely used instructional programs for improving teamwork among aircrews and other organizational contexts where risk factors are often high (Mearns et al., 2001). Prince and Salas (1993) identified seven skills crucial for teamwork that serve as the domains of CRM: communication, decision-making, mission analysis, adaptability, assertiveness, situation awareness, and leadership. The goal of CRM is error management and constructing strategies that mitigate recurring and disabling errors that rob the team of cohesion and teamwork (Helmreich et al., 1999). Support has been found for the relation between CRM behaviors, crew mission planning, and mission performance (Spiker, Nullmeyer, Tourville, & Silverman, 1998). A study of aircrew performance found the most effective crews exhibited CRM skills (Nullmeyer & Spiker, 2003) including military helicopter aircrews (Salas et al., 1999).

In Army aviation, these behaviors were conceptualized as 13 key dimensions, or "Basic Qualities", of effective aircrews (see Table 3):

Table 3

Army aviation basic qualities

-
- Establish and maintain team leadership and crew climate
 - Pre-mission planning and rehearsal accomplished
 - Application of appropriate decision making techniques
 - Prioritize actions and distribute workload
 - Management of unexpected events
 - Statements and directives clear, timely, relevant, complete, verified
 - Maintenance of mission situational awareness
 - Decisions and actions communicated and acknowledged
 - Supporting information and actions sought from crew
 - Crewmember actions mutually cross-monitored
 - Supporting information actions offered by crew

- Advocacy and assertion practiced
- Crew-level after-action reviews accomplished.

The Basic Qualities have come to be subsumed under five *Crew Coordination Objectives* (CCO): 1) Establish and maintain team relationships; 2) Mission planning and rehearsal; 3) Establish and maintain workload levels; 4) Exchange mission information; and, 5) Cross-monitor performance. These CCO categories are similar to the U.S. Navy's seven *Critical Skills* and the Air Force's six *Crew Resource Management Core Areas*. They comprise the behaviors rated by the Army when evaluating how well aircrews are functioning as cohesive teams in coordinating their actions. These four dimensions of cohesion derived from the review of the literature are conceptually similar to the Army's five CCOs (see Table 4).

Table 4

The four dimensions of cohesion and the Army's five crew coordination objectives

<i>Four Dimensions of Cohesion</i>	Army Crew Coordination Objectives (CCO)
Commitment	(CCO 1) establish and maintain team relationships
Communication	(CCO 4) exchange mission information
Cooperation	(CCO 2) Mission planning and rehearsal (CCO 5) Cross-monitoring of performance
Command	(CCO 3) Establish and maintain workload levels

Commitment is fostered by an aircrew's efforts to "establish and maintain team relationships" (CCO 1). Communication hinges on the aircrew's ability to "exchange mission information" (CCO 4). Cooperation among aircrew members is accomplished through effective "mission planning and rehearsal" (CCO 2) and is maintained through a mutual "cross-monitoring of performance" (CCO 5). Command, or aircrew leadership, forms the foundation of all of these objectives and further includes a responsibility to "establish and maintain workload levels" throughout the mission (CCO 3). The ability to associate these four dimensions with established objectives of coordination in Army aviation supports their utility as dimensions of a schematic for effectively building and maintaining military aircrew cohesion.

This review of cohesion in organizational and sports psychology research found that cohesion is a multifaceted construct that could be described as consisting of four primary dimensions (Figure 1):

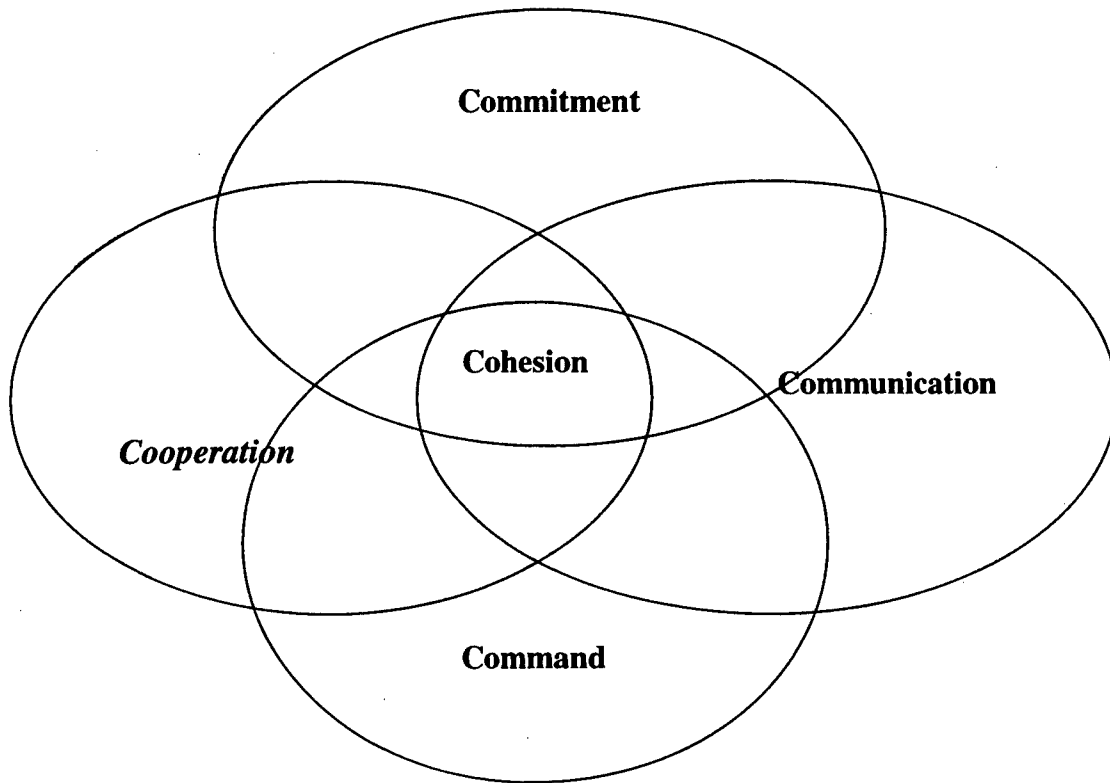


Figure 1. A “Four C” schematic of cohesion.

The overlapping of circles in the schematic is intended to indicate the reciprocal nature of these dimensions. The complexity of the relationships derived from our review of literature led to the conclusion that each of these dimensions of cohesion alternately affects and is affected by each other. For example, a sense of commitment develops to the extent that one perceives being included in mutual problem solving through open communications, while the growing commitment level increases the effectiveness of communications. Similarly, team members’ motivation to cooperatively work together toward the accomplishment of joint goals relies upon both a shared mental model developed through clear, timely communications and a commitment to team goals. Effective command coordinates cohesion development by modeling and promoting team-building behaviors among members that enhance commitment, communication, and cooperation.

Discussion

The past decade has produced an abundance of cohesion research in the fields of Organizational and Sports Psychology that can be applied to Army aviation crews. Commitment, communication, cooperation, and command provide four dimensions of focus in determining how best to enhance cohesion among small task-oriented teams such as aircrews. Commitment is the initial and sustaining motivation for individuals to remain engaged in a team's pursuit of objective goals. Communication is the imperative transfer of information that must be present and will ideally serve to create accurate estimations of how co-members will respond to unpredictable circumstances. Cooperation is the willingness to provide input and collaborate as the team functions towards meeting goals. Command is the leadership role that serves a significant influence in administering and managing team dynamics so that optimum teamwork can be experienced and enhance the likelihood of success.

Practical strategies are available that foster each of these dimensions. Primarily, cohesive teams learn how to earn maximum effort from members because team leadership demonstrates competency and concern for the individual at the personal and organizational levels. In other words, teams often receive commitment from members when the member perceives commitment from the team. Communication can be strengthened when member input is welcomed and feedback is positive or corrective rather than critical. Cooperation emerges as members experience ongoing training, achievements are recognized, and collaborative performance assessment is provided. Command is most successful when followers have established bonds with the leader so practicing strategies that encourage skills development are imperative.

Army aircrews are unique environments that require high levels of teamwork. Cohesion, then, must remain an ongoing training concern. The four dimensions presented in this review suggest a starting point for research. However, much more needs to be done. For example, how might commitment be fostered in a new generation of Army aviators? How might advances in communication technology impact the communication demands placed upon crews? What are effective approaches to encouraging cooperation that might be appropriate exercises for aircrews? How might command skills be improved as the demands placed upon Army aircrews change?

Table 5. List of the articles reviewed by category

Authors	Commitment	Communication	Cooperation	Command
Ahlfinger, N.R., & Esser, J.K. (2001)		X		
Anderson, C.M., & Martin, M.M. (1999)		X		
Austin, J.R. (1997)			X	
Bandura, A. (1997)	X			
Bartone, P.T., & Adler, A.B. (2000)	X			
Bass, M.B., Avolio, B.J., Jung, D.I., & Berson, Y. (2003)				X
Behling, O., & McFillen, J.M. (1996)				X
Bender, W.J., & Septelka, D.M. (2002)				X
Bernthal, P.R., & Insko, C.A. (1993)		X		
Bliese, P.D., & Castro, C.A. (1999)				X
Boone, K.S., & Beitel, P. (1997)			X	
Bray, C.D., & Whaley, D.E. (2001)	X			
Campbell, K.S., White, C.D., & Johnson, D.E. (2003)		X		
Cannon-Bowers, J.A., & Salas, E. (1998)			X	
Carlless, S.A., & de Paola, C. (2000)			X	
Carron, A.V., & Brawley, L.R. (2000)	X			
Carron, A.V., Brawley, L.R., Eys, M.A., Bray, S., Dorsch, K., Estabrooks, P., Hall, C.R., Hardy, J., Hausenblas, H., Madison, R., Pasekovich, R., Patterson, M.M., Prapavessis, H., Spink, K.S., & Terry, P.C. (2003)			X	
Carron, A.V., & Spink, K.S. (1995)		X		
Chan, Z., & Lawson, R.B. (1996)		X		
Chang, A., & Bordia, P. (2001)			X	
Church, A.H., & Wacławski, J. (1998)				X
Cohen, S.G., Mohrman, S.A., & Mohrman, Jr., A.M. (1999)		X		
De Dreu, C.K.W. (2003)			X	
Deluga, R.J. (1995)				X
Dessler, G. (1999)	X			

Devine, D.J., & Clayton, L.D. (1999)	X			
Authors	Commitment	Communication	Cooperation	Command
Dickson, M.W., Smith, D.B., Grojean, M.W., & Ehrhart, M. (2001)				X
Dion, K.L. (2000)	X			
Doolen, T.L., Hacker, M.E., & Van Aken, E.M. (2003)		X		
Druskat, V.U., & Pescosolido, A. (2002)				X
Dvir, T., Eden, D., Avolio, B.J., & Shamir, B. (2002)				X
Erdem, F., & Janset, O. (2003)	X			
Eys, M.A., Hardy, J., Carron, A.V., & Beauchamp, M.R. (2003)			X	
Gammage, K.L., Carron, A.V., & Estabrooks, P.A. (2001)			X	
Gibson, C.B., & Zellmer-Bruhn, M.E. (2001)			X	
Gilbert, J.A., & Tang, T.L. (1998)	X			
Goh, S.C. (1998)				X
Greenless, L., Graydon, J., & Maynard, I. (2000)	X			
Griffith, J. (2002)			X	
Grubb, G.N., Simon, R.A., Leedom, D.K., & Zeller, J.L. (1995)			X	
Hamilton, B.H., Nickerson, J.A., & Owan, H. (2003)	X			
Harrison, D.A., Price, K.H., & Bell, M.P. (1998)			X	
Helmreich, R.L., Merritt, A.C., & Wilhelm, J.A. (1999)			X	
Hirokawa, R.Y., DeGooyer, D., & Valde, K. (2000)				X
Hodson, R. (1997)				X
Hodson, G., & Sorrentino, R.M. (1997)		X		
Hoegl, M., & Gemuenden, H.G. (2001)				X
Hogg, M.A., & Hains, S.C. (1998)		X		
Hollenbeck, J.R., Ilgen, D.R., LePine, J.A., Colquitt, J.A., & Hedlund, J. (1998)		X		
Houghton, S.M., Simon, M., Aquino, K., & Goldberg, C.B. (2000)		X		
Johnson, S.D., & Bechler, C. (1998)				X
Jones, P.E., & Roelofsma, P.H.M.P. (2000)			X	
Jordan, M.H., Field, H.S., & Armenakis, A.A. (2002)			X	

Karrasch, A.I. (2003)	X			
Karau, S.J., & Hart, J.W. (1998)			X	
Karau, S.J., & Williams, K.D. (1995)			X	
Authors	Commitment	Communication	Cooperation	Command
Katz, N., & Koenig, G. (2001)				X
Keyton, J. (1999)			X	
Klein, S.M. (1996)				X
Knouse, S.B., & Dansby, M.R. (1999)			X	
Knouse, S.B., Smith, A., & Smith, P. (1998)			X	
Kozub, S.A., & McDonnell, J.F. (2000)	X			
Langan-Fox, J.D., Code, S., Gray, R., & Langfield-Fox, K. (2002)	X			
Lawford, G.R. (2003)	X			
Lawler, E.J. (2001)	X			
Lawler, E.J., Thye, S.R., & Yoon, J. (2000)			X	
Lembke, S., & Wilson, M.G. (1998)	X			
MacMillan, J., Entin, E.E., Entin, E.B., & Serfaty, D. (1994)			X	
Manz, C.C., & Neck, C.P. (1995)		X		
Marks, M.A., Mathieu, J.E., & Zaccaro, S.J. (2001)				X
Marks, M.A., Zaccaro, S.J., & Mathieu, J.E. (2000)		X		
McClure, P., & Broughton, W. (1998)	X			
Mearns, K., Flin, R., & O'Connor, P. (2001)		X		
Merritt, A.C. (1995)		X		
Moore, R.M. (1997)		X		
Mudrack, P.E., & Farrell, G.M. (1996)	X			
Mullen, B., & Cooper, C. (1994)	X			
Mumford, M.D., Zaccaro, S.J., Connelly, M.S., & Marks, M.A. (2000)				X
Mumford, M.D., Zaccaro, S.J., Harding, F.D., Jacobs, T.O., & Fleishman, E.A. (2000)				X
Naff, K.C., & Thompson, R.C. (2000)			X	
Neubert, M.J. (1999)				X

Nullmeyer, R.T., & Spiker, V.A. (2003)				X	
Oliver, L.M., Harman, J., Hoover, E., Hayes, S.M., & Pandhi, N.A. (2000)				X	
Paris, C.R., Salas, E., & Cannon-Bowers, J.A. (2000)				X	
Authors	Commitment	Communication	Cooperation	Command	
Patrashkova-Volzdoka, R.R., McComb, S.A., Green, S.G., & Compton, W.D. (2003)		X			
Pescosolido, A.T. (2001)				X	
Peterson, R.S., & Behfar, K.J. (2003)		X			
Pollack, B.N. (1998)		X			
Popper, M. (1996)				X	
Postems, T., Tanis, M., & de Wit, B. (2001)	X				
Rasker, P.C., Post, W.M., & Schraagen, J.M.C. (2000)		X			
Rempel, M.W., & Fisher, R.J. (1997)			X		
Rhoades, L., & Eisenberger, R. (2002)	X				
Rhoades, L., Eisenberger, R., & Armeli, S. (2001)	X				
Ryska, T.A., & Cooley, D. (1999)				X	
Salas, E., Burke, C.S., & Cannon-Bowers, J.A. (2000)			X		
Salas, E., Burke, C.S., & Samman, S.N. (2001)			X		
Salas, E., Fowlkes, J.E., Stout, R.J., Milanovich, D.M., & Prince, C. (1999)			X		
Sargent, L.D., & Sue-Chan, C. (2001)			X		
Schneider, B., & Goldstein, H.W. (1995)	X				
Shepperd, J.A., & Taylor, K.M. (1999)			X		
Shields, D.L.L., & Gardner, D.E. (1997)				X	
Siebold, G.L., (1999)			X		
Smith, B.N., Kerr, N.A., Markus, M.J., & Stasson, M.F. (2001)			X		
Spiker, V.A., Nullmeyer, R.T., Tourville, S.J., & Silverman, D.R. (1998)			X		
Steckler, N., & Fondas, N. (1995)					X
Street, M.D. (1997)		X			

Sullivan, P.J., & Feltz, D. L. (2001)				X	
Tang, T.L., & Sarfield-Baldwin, L.J. (1996)		X			
Thomas, J.L., Dickson, M.W., & Bliese, P.D. (2001)					X
Thomas, P., Pinto, J.K., Parente, D.H., & Druskat, V.U. (2002)		X			
Turman, P.D. (2003)					X
Authors		Commitment	Communication	Cooperation	Command
van Knippenberg, D., & van Schie, E.C.M. (2000)		X			
VandeWalle, D., Challagalla, G.N., Ganesan, S., & Brown, S.P. (2000)					X
Voight, M., & Callaghan, J. (2001)					X
Watson, W.E., Johnson, L., Kumar, K., & Critelli, J. (1999)				X	
Weinberg, R., & McDermott, M. (2002)			X		
Widmeyer, W.N., & Ducharme, K. (1997)					X
Yagil, D. (1995)		X			
Zaccaro, S.J., Gualtieri, J., & Minionis, D. (1995)				X	
Zaccaro, S.J., Rittman, A.L., & Marks, M.A. (2001)					X

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Zaccaro, S.J., & Rittman, A.L., & Marks, M.A. (2001). Team leadership. *The Leadership Quarterly*, 12, 451-483.

Appendix A
Commitment

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Appendix A
Annotations

1. Bandura, A. (1997). Self-efficacy. *Harvard Mental Health Letter*, 13(9), 4-6.

Member contribution and commitment to a team can be influenced by the perception members hold of whether or not the team can accomplish its goals and if they are qualified to contribute to the team. The author theorizes that self-efficacy regulates an individual's cognitive functioning, motivation, affect, and mood. Self-efficacy will influence judgments made about the team. High self-efficacy attracts support from others, invites input, and accepts difficult tasks. Low self-efficacy in teams results in a loss of task commitment. Instead, low efficacy teams focus on failures and inabilities. They often spiral into criticism and experience high attrition.

The author suggests steps that can help to increase self-efficacy. One step is for leadership to implement small, obtainable successes. Another strategy is for the team to change its conversation and to persuade itself that it can be successful. Modeling success through exposure to successful teams and ongoing training can be helpful. Lastly, the team must find a means to reduce stress.

2. Bartone, P.T., & Adler, A.B. (2000). Cohesion over time in a peacekeeping medical task force. *Military Psychology*, 11(1), 85-107.

Military units frequently face deployment leaving behind spouses and families. These times can be stressful for military personnel and the stress can potentially influence performance. This study examines cohesion among a U.S. Army medical task force on a 6-month deployment to Yugoslavia. The task force consisted of 236 personnel and they were surveyed before, during, and near the end of deployment. Particular interest was given to the influence of stress upon morale, health, and cohesion.

Findings indicated that cohesion experienced an inverted-U pattern starting low, reaching a high point about mid-deployment, and then decreasing towards the end. Differences in the fluctuation of cohesion were noted among different military specialties. Finally, home stressors were negatively associated with cohesion, but co-worker relationships and confidence in leadership proved to influence cohesion.

3. Bray, C.D., & Whaley, D.E. (2001). Team cohesion, effort, and objective individual performance of high school basketball players. *The Sport Psychologist*, 15, 260-275.

Team commitment can be related to perceptions of team cohesion and performance. Bray and Whaley examine the relationship between perceptions of cohesion and the amount of expended effort made by high school basketball players. Participants were recruited from four boys and four girl's high school basketball teams. Two variables were measured: team cohesion and expended effort. The Group Environment Questionnaire measured team cohesion and the Intrinsic Motivation Inventory measured expended effort. Performance was measured by a complex formula combining field goal and foul shot percentage, points per game, assists per

game, rebounds per game, steals per game, and turnovers per game. Data were gathered at mid-season and at the end of the season.

Findings were mixed in describing the relationship between cohesion and individual performance. The hypothesis that cohesion would predict individual performance was not supported at mid-season but did receive partial support at the end of the season. Members reporting greater satisfaction with team interactions, with their personal involvement, and with their perceptions of being accepted achieved higher levels of performance by the end of the season. The authors conclude that high school coaches would be well served to organize non-sport events to foster friendships and bonding between members.

4. Carron, A.V., & Brawley, L.R. (2000). Cohesion. *Small Group Research*, 31(1), 89-106.

The authors trace the developmental history of cohesion during the last half of the twentieth-century. Historically, cohesion has been defined in ambiguous terms as motivation to remain involved in groups. The authors propose that cohesion is a multidimensional concept that can be measured. One component, group integration (GI), reflects individual perceptions about group closeness, similarity, and the degree of bonding present in the group. Individual Attraction to the Group (ATG) reflects the individual's motivation to remain in a group. These two components are measured in terms of task and social concerns. Cohesion is described as changing over time, as a tool for achieving a group's purpose, and as an affect influence upon members.

5. Dessler, G. (1999). How to earn your employees' commitment. *The Academy of Management Executive*, 13(2), 58-67.

The author reports research supporting the concept that team commitment can motivate members to work for the survival of the organization, to sacrifice for the team, to be willing to help other members, and to adapt with less difficulty to unforeseen circumstances. Several suggestions are made as methods to encourage member commitment. These suggestions are summarized into five steps including: a) commit to people-first values, b) clarify and communicate your mission, c) guarantee organizational justice, d) create a sense of community, and e) support employee development. Practical strategies for accomplishing these five steps are offered.

6. Devine, D.J., & Clayton, L.D. (1999). Teams in organizations. *Small Group Research*, 30(6), 678-711.

Nearly half of U.S. organizations report using work-teams for product development and production. Teams were more prevalent in larger organizations with multiple departments, more sales, and more employees. Numerous factors were found to determine whether these teams were effective or not, with the interpersonal climate serving as the best indicator.

- 7. Dion, K.L. (2000). Group cohesion: From 'field of forces' to multidimensional construct. *Group Dynamics: Theory, Research, and Practice*, 4(1), 7-26.**

Creating cohesion in teams begins with recognizing a definition for the construct. Definitions of cohesion have evolved over the years. Early definitions described cohesion as an ambiguous collection of *forces* that prompt individuals to remain together and to resist disruption as a team. Subsequent descriptions of cohesion stressed the relationship between cohesion and interpersonal attraction. Advances in research methodology further developed cohesion as a multidimensional construct.

Several multidimensional models have evolved over the years. The hierarchical model conceptualizes cohesion as a phenomenon consisting of vertical (superior-subordinate) and horizontal (subordinate-subordinate) relationships. Sports psychology revised the hierarchical model, distinguishing between individual and group components while recognizing that cohesion encompasses social and task dynamics. The perceived cohesion model emphasizes the relationship between feelings of belonging to the group and morale. Self-categorization theory posits that cohesion is linked to attraction for the group as an entity and the assigned roles and goals groups adopt. The author concludes that conceptualizations of cohesion will continue to change in the future, so future research is merited.

- 8. Erdem, F., & Janset, O. (2003). Cognitive and affective dimensions of trust in developing team performance. *Team Performance Management*, 9(5/6), 131-135.**

Trust is an important component in building team commitment. This study of 50 work-based teams found that teams with high levels of trust experience generally perform better. One implication is that trust-related behaviors by employees can be a potential measure in employee appraisals. The authors suggest that organizations need to make trust a primary value in their relationships with employees and a feature of team-building training.

- 9. Gilbert, J.A., & Tang, T.L. (1998). An examination of organizational trust antecedents. *Public Personnel Management*, 27(3), 321-338.**

Trust in organizations can influence the amount of cohesion that eventually develops in teams. Trust is related to the degree of commitment and loyalty the employee holds for the team and the organization. Communication contributes to organizational trust because the more an individual is included in the dissemination of information the more likely they are to experience increased organizational trust. Trust can be lost when perceptions of disloyalty emerge within the organization due to negative circumstances such as downsizing. If trust is compromised team members often begin to withdraw from organizational relationships, reduce their involvement, increase absenteeism, experience low morale, and engage in destructive behavior at the organization's expense.

This study included 83 managers from a federal government agency to determine what factors are associated with organizational trust. Trust did not differ based upon gender or race. The findings revealed that, to the extent employees are involved in fulfilling relationships at

work the more likely they will experience increased organizational satisfaction and trust. The authors conclude that organizations need to build upon this and similar research in their human resource efforts to retain employees. One suggestion is to introduce team-building programs. The authors concluded by recommending careful monitoring of how employees are treated and overall member satisfaction.

- 10. Greenless, I., Graydon, J., & Maynard, I. (2000). The impact of individual efficacy beliefs on group goal selection and group goal commitment. *Journal of Sports Sciences*, 18, 451-459.**

Proponents of collective efficacy theory have suggested that member beliefs about the ability of their team to be successful will impact performance. This study employed 24 subjects assigned to triads that contained two confederates. Each group was assigned two time-trials on ergometers. The winning team was promised a prize. Bonus points were given for accomplishing team goals and for higher goals. A penalty was imposed if the team failed to meet its goals. Participants were randomly assigned to high efficacy teams and low efficacy teams.

Participants were given pre-trial questionnaires before each time-trial. Team goals were set for finishing time and position goal before each time-trial. Between trials teams were given bogus feedback concerning their performance with high efficacy groups receiving high performance feedback and low efficacy teams receiving negative performance feedback. Results found that goal setting remained constant for high efficacy teams but lowered for low efficacy teams between trials 1 and 2.

- 11. Hamilton, B.H., Nickerson, J.A., & Owan, H. (2003). Team incentives and worker heterogeneity: An empirical analysis of the impact of teams on productivity and participation. *Journal of Political Economy*, 111(3), 465-496.**

The past 30 years have witnessed a significant increase in the number of organizations that utilize teams to accomplish production goals. Research findings have generally supported, to varying degrees, the notion that teams enhance productivity. This study investigates member motivations for joining teams.

The authors studied the effects of implementing production teams on production goals. Their study was conducted at Koret Inc. from 1995-97 and included 288 employees. The introduction of teams led initially to an 18 percent increase in productivity. The researchers were surprised to observe that high-productivity workers were the first to join teams despite receiving decreases in pay. Early teams demonstrated the benefits of collaboration through productivity increases that surpassed productivity levels of their highest-ability workers. As the number of teams increased low-ability workers were assimilated resulting in a final productivity increase of 14 percent overall. Free-riding was cited as a possible explanation for the decrease of productivity.

- 12. Karrasch, A.I. (2003). *Lessons learned on collective efficacy in multinational teams.* (ARI Technical Report 1137). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A414 109)**

Karrasch explores the integrated beliefs that develop concerning the capabilities of multinational teams. Data were gathered for the Stabilization Force in Bosnia-Herzegovina concerning collective efficacy beliefs. Efficacy beliefs were found to be strong at the primary team level but not as strong at the organizational level. The author suggests that different factors might influence efficacy beliefs at the two levels.

- 13. Kozub, S.A., & McDonnell, J.F. (2000). *Exploring the relationship between cohesion and collective efficacy in rugby teams.* *Journal of Sport Behavior*, 23(2), 120-129.**

The relationship between collective efficacy and perceived cohesion was explored in this study. Ninety-six athletes from seven rugby clubs participated in this study. Subjects were given the Group Environment Questionnaire and a collective efficacy measure. Findings revealed that the task measures of cohesion were stronger predictors of collective efficacy than were the social dimensions of cohesion.

- 14. Langan-Fox, J.D., Code, S., Gray, R., & Langfield-Fox, K. (2002). *Supporting employee participation: Attitudes and perceptions in trainees, employees, and teams.* *Group Processes & Intergroup Relations*, 5(1), 53-82.**

Past research of individual motivation to remain committed to a team often focused on post-performance individual attitudes (e.g., level of satisfaction) or team productivity. Langan-Fox et al. examined the process of maintaining long-term individual interest, participation, and commitment to team goals as well as support for continued participation. Two studies were conducted with one surveying member attitudes based upon role classification (e.g., shop floor vs. specialty vs. management, skilled vs. unskilled). The second focused on goal commitment among shop floor workers. Shop floor workers reported less commitment for employee participation and perceived less organizational support for participation than managers or specialty workers. They also found that perceived organizational status among shop floor workers predicted goal commitment.

- 15. Lawford, G.R. (2003). *Beyond success: Achieving synergy in teamwork.* *The Journal for Quality & Participation*, Fall, 23-27.**

Effective teams are more than simply a collection of individuals. Effective teams have created teamwork through members integrating values, purpose, attitudes, and actions to a degree that the effort of one complements the efforts of the whole. Synergy is used to describe teams that have obtained a level of teamwork that exceeds the sum total of productivity they could otherwise achieve working independently.

The author suggests that teams create synergy when certain characteristics are present. Shared interests and mutually accepted goals exist among members. Members cooperate and share recognition. Members share accountability and demonstrate mutual trust. Diversity is

accepted and encouraged. An important feature is mutual investment in the team vision and planning. The author suggests that synergy must be nurtured in teams and begins by challenging beliefs about issues such as power and control that can impede teamwork.

16. Lawler, E.J. (2001). An affect theory of social exchange. *American Journal of Sociology*, 107(2), 321-352.

Social exchange theory posits that individuals develop a sense of commitment to teams as positive interpersonal interactions are experienced over time. An affective dimension is proposed suggesting that interactions will generate emotions dependent upon the negative or positive nature of the interactions. The emotions produced by teams or "social units" are determined by the degree of jointness present in the exchange task. Jointness is greatest if members find it difficult to distinguish their individual contributions to solving the exchange task and when members share a sense of mutual responsibility for task outcomes.

The author suggests that social exchange theory presents a rational explanation for commitment to teams based upon repeating exchanges in order to receive benefits. An affective theory of exchange offers that affective characteristics exert influence on the team that goes beyond individual benefits to team dynamics. Exchanges are reciprocal, creating a generalized emotional perception of the team, resulting in greater solidarity if positive and increased detachment if negative. Emotions produced in exchanges are non-rational and involuntary, and give or detract from a sense of value attributed to the team.

Positive exchanges result in positive emotions concerning the team and other team members. Cohesion is enhanced as members form attachments with the team and other members as sources of meeting future affective goals. These attachments are considered positive if they serve the collective good of the team. However, if the attachments degenerate into individualistic-oriented goals, they can become a negative influence on teams. Negative exchanges generally lead to negative affective responses that can serve to diminish commitment and lead to detachment.

The author concludes that promoting commitment within teams should be viewed as an integrative system combining rational and non-rational processes. Commitment is likely to be fostered in teams where individuals determine exchanges to be positive and attributions are made to the team as a potential source of positive future emotions. This process will be fueled by the emotions produced in reaction to the exchanges that occur. The implication is that teams need to begin nurturing a sense of commitment early in team formation by stressing interpersonal skills and by encouraging mutual responsibility for team success or failure.

17. Lembke, S., & Wilson, M.G. (1998). Putting the 'team' into teamwork: Alternative theoretical contributions for contemporary management practice. *Human Relations*, 51(7), 927-944.

Social identity theory proposes that people join teams or groups based upon their attraction to the team and how they will fit in the team. Once joined, new members begin a process of identifying with the team's goals, adopting team norms, and creating an identity as a team. Part

of identifying with a team is assessing the perceived status to be gained through team membership and assuming a desired role within the team.

The authors suggest that teams begin to form their own models of information and thinking processes. Individuality is diminished even though interdependent tasks might be assigned. The authors propose that such identification with the team, even at the expense of individuality, is the essence of effective teamwork.

18. McClure, P., & Broughton, W. (1998). *Military community cohesion*. (MFI technical report 98-4). Scranton, PA: Military Family Institute of Marywood University. (AD A355 361)

Much of military cohesion research has focused on the interpersonal dynamics at work within units. The assumption is that cohesion improves performance and enhances positive perceptions of team membership. McClure and Broughton sought to determine if the effect of military life on marriage and family might influence perceptions of unit readiness and retention.

This study analyzed military community cohesion at the instillation or base level and its influence upon Soldier family adaptation to military life especially in times of deployment. A sample of 325 military members and spouses were surveyed in this study. Subjects were given the Community Cohesion Questionnaire and the Military Community Cohesion Scale. Survey items included variables such as location of housing (i.e., base vs. civilian neighborhood), the presence of children, and spousal support for remaining in the military until retirement.

The relationship between base and neighborhood cohesion was found to be stronger when the respondent's neighborhood is an extension of the base. The presence of children did not serve as a significant influence upon base cohesion. However, the connection between plans to extend one's tour of duty and cohesion found support, as did plans to remain in the military until retirement and cohesion. The authors conclude that base cohesion does enhance Soldier perceptions of readiness and retention. High base cohesion might also assist families in adapting to the stress of military life.

19. Mudrack, P.E., & Farrell, G.M. (1996). An examination of functional role behavior and its consequences for individuals in group settings. *Small Group Research*, 26(4), 542-571.

Adult members of 68 ongoing small groups evaluated the role behaviors, personal contributions to the team, and group cohesiveness of their peers. Participants were found to engage in task roles, maintenance roles, and/or individualistic roles opposed to the task. Those who performed task roles were also found to engage in maintenance roles. Task roles were found to be most valuable to group effort.

- 20. Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, 115(2), 210-227.**

The authors conducted a meta-analytical review of the literature pertaining to the cohesiveness-performance relationship. Their review found that the relationship between cohesiveness and performance is more significant among smaller rather than larger groups. The effect was more prevalent among real groups than artificial ones. Commitment to task was associated with the cohesiveness-performance effect more than interpersonal attraction or group pride. The authors suggest the most direct effect might be from performance to cohesiveness rather than cohesiveness to performance.

- 21. Postems, T., Tanis, M., & de Wit, B. (2001). Communication and commitment in organizations: A social identity approach. *Group Processes & Intergroup Relations*, 4(3), 227-246.**

The direction of communication within teams and organizations can influence individual commitment to the team. The authors found in two studies that horizontal communication (e.g., peer-to-peer, socio-emotional) was less strongly related to levels of commitment at the organizational and unit level. Contrary to the anecdotal assumption that positive horizontal interactions will result in greater commitment, they found that the quality of vertical communication with management actually serves to determine commitment. Postems and colleagues conclude that levels of commitment might reflect an identification perspective with the organization rather than satisfaction with social relationships within the team.

- 22. Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Research*, 87(4), 698-714.**

Employee perceptions of organizational support can influence feelings of well-being. The authors reviewed more than 70 studies and found that employee perceptions of experiencing fairness, supervisor support, rewards, and pleasant work conditions were associated with perceived organizational support (POS). Positive POS resulted in greater affective commitment to the organization, improved performance, and reduced withdrawal behavior.

- 23. Rhoades, L., Eisenberger, R., & Armeli, S. (2001). Affective commitment of the organization: The contribution of perceived organizational support. *Journal of Applied Psychology*, 86(5), 825-836.**

Interest in the affective influence upon commitment is growing. The authors studied the relationship between affective commitment (AC) and perceived organizational support (POS) and how these impact employee turnover. The authors conducted three studies with diverse populations (i.e., retail employees, poultry and feed processing workers). Findings supported the premise that POS influences AC. Higher AC results in decreased employee withdrawal behavior and attrition.

24. Schneider, B., & Goldstein, H.W. (1995). The ASA framework: An update. *Personnel Psychology*, 48(4), 747-773.

Research has sought to determine factors that motivate individuals to commit to organizational teams. The authors suggest that organizations experience a selection process based upon the individual's belief that his or her personality fits with the organization's culture. Organizational culture reflects its goals and values. The culture is frequently a reflection of the personality characteristics of the founder or the founder's colleagues. Organizations eventually retain members that *fit* with the *personality* of the organization. Members experience an attraction-selection-attrition process. Those who fit will remain and those who do not fit will leave the organization. In time, the retention of people with distinct personalities will sustain the organizational culture.

25. Tang, T.L., & Sarfield-Baldwin, L.J. (1996). Distributive and procedural justice as related to satisfaction and commitment. *S.A.M. Advanced Management Journal*, 61(3), 25-31.

Employee perceptions of organizational justice are assumed to influence employee commitment and satisfaction with the organization. Two hundred employees of a Veterans Administration Medical Center were randomly surveyed concerning perceptions of organizational justice. A relationship was found between perceptions of procedural and distributive justice and employee satisfaction and commitment.

26. Thomas, P., Pinto, J.K., Parente, D.H., & Druskat, V.U. (2002). Adaptation to self-managing work teams. *Small Group Research*, 33(1), 3-31.

Self-managing work teams (SMWT) are responsible for their own management and monitoring. The assumption is that most individuals can readily adapt to these teams. The authors suggest that adaptation might be more difficult for some than it is for others. They conceptualize adaptation as consisting of short-term (i.e., successfully performing team tasks) and long-term dimensions (i.e., full cooperation in the team and commitment to team self-management) that are crucial for maintaining productivity.

One aspect offered as significant in the ability to adapt is personality. Pinto et al. utilized the Big Five Model of personality. The Big Five Model suggests that human personality can be characterized by five categories (Conscientiousness, Extraversion, Neuroticism, Agreeableness, and Openness to Experience). Conscientious individuals are likely to be responsible, hard-working, and dependable. Extraverted people are social, assertive, and energetic. Neuroticism is marked by emotional instability, pessimism, and insecurity. Agreeableness involves flexibility, tolerance, and a cooperative attitude. Openness to Experience involves open-mindedness, curiosity, and an imaginative orientation.

Results indicated that member conscientiousness and attitude toward SMWTs were linked to self-ratings of long-term adaptation. Member attributions of the team attitudes proved to be a significant predictor of long-term adaptation. Manager perceptions of long-term adaptation were based upon short-term outcomes of team performance. The authors suggest that personality

profiles might serve to improve team commitment and productivity since there appears to be a link between personality and commitment.

- 27. van Knippenberg, D., & van Schie, E.C.M. (2000). Foci and correlates of organizational identification. *Journal of Occupational & Organizational Psychology*, 73(2), 137-147.**

The authors questioned the degree of influence identification with an organization will have upon team member commitment to the organization teams and its goals. Building upon the social identity perspective, the authors predicted that member identification with a work group would be a stronger influence than identification with the organization. They found that work-group identification influences job satisfaction, turnover intentions, job involvement, and job motivation. They suggest that organizations seeking to enhance organizational commitment need to focus their efforts at the team level.

- 28. Yagil, D. (1995). *A study of cohesion and other factors of major influence on Soldiers' and unit effectiveness*. (ARI Research Note 95-11). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A299 079)**

Cohesion is commonly associated with performance in military units. This study sought to examine the commitment relationship between organizational bonding, horizontal bonding, and vertical bonding to unit performance. The study analyzed the intervening effects of professionalism, confidence in the commander, tenure, morale, motivation and stress.

The "platoon cohesion index" was utilized and data were gathered from 18 infantry platoons and 7 armor companies from the Israeli military. Unit commanders provided performance evaluations. Findings indicate a strong relationship between cohesion and unit effectiveness. The intensity of the correlation between cohesion and effectiveness were similar to the correlation between professionalism and effectiveness leaving the author to conclude that building unit cohesion might be as important as the improvement of the unit's professionalism.

Differences emerged among commanders and Soldiers in their perceptions of the relationship between cohesion and personal effectiveness. Morale and stress were found to influence cohesion and team effectiveness. High membership tenure was found to decrease cohesion, but the author suggests the type of unit might mitigate this finding since short-term teams might develop a different kind of cohesion.

Appendix B
Communication

Article Reviewed	Page
Ahlfinger, N.R., & Esser, J.K. (2001). Testing the groupthink model: Effects of leadership and conformity predisposition. <i>Social Behavior and Personality</i> , 29(1), 31-42.	B-3
Anderson, C.M., & Martin, M.M. (1999). The relationship of argumentativeness and verbal aggressiveness to cohesion, consensus, and satisfaction in small groups. <i>Communication Reports</i> , 12(1), 21-31.	B-3
Bernthal, P.R., & Insko, C.A. (1993). Cohesiveness without groupthink. <i>Group & Organization Management</i> , 18(1), 66-87.	B-4
Campbell, K.S., White, C.D., & Johnson, D.E. (2003). Leader-member relations as a function of rapport management. <i>The Journal of Business Communication</i> , 40(3), 170-194.	B-5
Carron, A.V., & Spink, K.S. (1995). The group size-cohesion relationship in minimal groups. <i>Small Group Research</i> , 26(1), 86-105.	B-5
Chan, Z., & Lawson, R.B. (1996). Groupthink: Deciding with the leader and the devil. <i>Psychological Record</i> , 46(4), 581-590.	B-6
Cohen, S.G., Mohrman, S.A., & Mohrman, A.M., Jr. (1999). We can't get there unless we know where we are going: Direction setting for knowledge work teams. In R. Wageman (Ed.), <i>Research on managing groups and teams: Groups in context</i> , Vol. 2, (pp. 1-31). Stamford, CT: JAI Press.	B-7
Doolen, T.L., Hacker, M.E., & Van Aken, E.M. (2003). The impact of organizational context on work team effectiveness: A study of production team. <i>IEEE Transactions on Engineering Management</i> , 50(3), 285-296.	B-7
Hodson, G., & Sorrentino, R.M. (1997). Groupthink and uncertainty orientation: Personality differences in reactivity to the group situation. <i>Group Dynamics: Theory, Research, and Practice</i> , 1(2), 144-155.	B-7
Hogg, M.A., & Hains, S.C. (1998). Friendship and group identification: A new look at the role of cohesiveness in groupthink. <i>European Journal of Social Psychology</i> , 28, 323-341.	B-8
Hollenbeck, J.R., Ilgen, D.R., LePine, J.A., Colquitt, J.A., & Hedlund, J. (1998). Extending the multilevel theory of team decision making: Effect of feedback and experience in hierarchical teams. <i>Academy of Management Journal</i> , 41(3), 269-282.	B-8
Houghton, S.M., Simon, M., Aquino, K., & Goldberg, C.B. (2000). No safety in numbers. <i>Group & Industrial Management</i> , 25(4), 325-353.	B-9
Manz, C.C., & Neck, C.P. (1995). Teamthink: Beyond the groupthink syndrome in self-managing work teams. <i>Journal of Managerial Psychology</i> , 10(1), 7-15.	B-9
Marks, M.A., Zaccaro, S.J., & Mathieu, J.E. (2000). Performance implications of leader briefings and team-interaction training for team adaptation to novel environments. <i>Journal of Applied Psychology</i> , 85(6), 971-985.	B-10
Mearns, K., Flin, R., & O'Connor, P. (2001). Sharing 'worlds of risk': Improving communication with crew resource management. <i>Journal of Risk Research</i> , 4(4), 377-392.	B-10

Merritt, A.C. (1995). Facing the issue. <i>The CRM Advocate</i> , 95(4), 1-7.	B-11
Moore, R.M. (1997). The positive effects of cohesion on the creativity in small groups. <i>International Social Science Review</i> , 72(3/4), 84-93.	B-11
Patrashkova-Volzdoska, R.R., McComb, S.A., Green, S.G., & Compton, W.D. (2003). Examining a curvilinear relationship between communication frequency and team performance in cross-functional project teams. <i>IEEE Transactions on Engineering Management</i> , 50(3), 262-269.	B-12
Peterson, R.S., & Behfar, K.J. (2003). The dynamic relationship between performance feedback, trust, and conflict in groups: A longitudinal study. <i>Organizational Behavior & Human Decision Processes</i> , 92(1/2), 102-112.	B-12
Pollack, B.N. (1998). The impact of sociophysical environment on interpersonal communication and feelings of belonging in work groups. In J. Sanford and B.R. Rose, (Eds.), <i>People, places and public policy</i> (pp. 71-78). Edmond, OK: Environmental Design Research Association.	B-12
Rasker, P.C., Post, W.M., & Schraagen, J.M.C. (2000). Effects of two types of intra-team feedback on developing a shared mental model in command & control teams. <i>Ergonomics</i> , 43(8), 1167-1189.	B-13
Street, M.D. (1997). Groupthink. <i>Small Group Research</i> , 28(1), 72-93.	B-13
Weinberg, R., & McDermott, M. (2002). A comparative analysis of sport and business organizations: Factors perceived critical for organizational success. <i>Journal of Sport Psychology (London)</i> , 14(4), 282-298.	B-14

Appendix B Annotations

1. Ahlfinger, N.R., & Esser, J.K. (2001). Testing the groupthink model: Effects of leadership and conformity predisposition. *Social Behavior and Personality*, 29(1), 31-42.

Groupthink is an emergent characteristic signified by concurrence-seeking communications at the expense of critical feedback within teams. Leadership style can have an influence on groupthink development. Leaders that bring their own preconceived solutions to the team and limit input are nurturing the negative effects of groupthink. Such leaders are labeled promotional and often control the team process rather than collaborate with other members.

Ahlfinger and Esser examine the relationship between leadership style and groupthink. They explore the role that personality can play in members and whether members are naturally predisposed to conform, demonstrate groupthink symptoms and exhibit poor decision-making. Subjects were divided into groups and were given a survival scenario, decision-making task, and questionnaires measuring temperament and groupthink symptoms. The survival scenario scores were compared with an expert's scoring.

Findings indicated that groups led by promotional leaders exhibited greater symptoms of groupthink and made poorer quality decisions than teams led by non-promotional leaders. They found no support for the relationship between those predisposed to conform and groupthink. The authors conclude that further research is needed.

2. Anderson, C.M., & Martin, M.M. (1999). The relationship of argumentativeness and verbal aggressiveness to cohesion, consensus, and satisfaction in small groups. *Communication Reports*, 12(1), 21-31.

Communication traits such as argumentativeness and aggression can emerge in the process of team interactions. Argumentativeness is a positive, constructive trait involving a member's willingness to argue differing opinions with other members. Verbal aggression is a negative, destructive trait that attacks the self-concepts of others while arguing differing opinions. Both traits are believed to be learned behaviors. Argumentativeness is frequently associated with those who are identified as leaders by others and are perceived as a critical force for mitigating groupthink. Aggression generally results in dysfunctional team relationships and has been linked to poor communication skills, anger expression, and manipulation of other members.

The authors examined the relationship between aggression and argumentativeness with cohesion, consensus, and team satisfaction. They used 208 communication students over a one-year period. Work groups of five to seven members were formed and each group was assigned a project that required a formal presentation. The average group met six times. At the end of the study each group was provided questionnaires to report on the level of aggression, argumentativeness, and satisfaction perceived within the team.

Findings supported the positive role of argumentativeness. Those higher in argumentativeness were more likely to perceive their fellow members as experiencing satisfaction with the team's communication. Argumentativeness welcomes critical feedback and clarifies when consensus has been reached in the group. The relationship between argumentativeness and cohesion was not as strong as anticipated, but the suggestion is made that personality variables could be an influence. Persons high in social desirability are likely to resist argumentativeness and interpret this behavior as relational discord.

Support for the destructive nature of aggression was found. Members who reported their groups to be low in cohesion, consensus, and satisfaction were often found to be the same members reporting aggressive communication. The authors offer that verbal aggression possibly influences perceptions of cohesion, consensus, and satisfaction, because these individuals are challenged by their limited ability to successfully argue a position without personal attacks on others. The requirement that these groups experience several meetings to reach solutions or complete tasks produces a negative attitude related to the group. The authors conclude that an effective strategy for enhancing team interactions and decision-making is to provide communication skills training in argumentativeness so that aggression can potentially be reduced.

3. Bernthal, P.R., & Insko, C.A. (1993). Cohesiveness without groupthink. *Group & Organization Management*, 18(1), 66-87.

A commonly perceived victim of groupthink is effective decision-making. Groupthink is assumed to be present in teams experiencing high levels of social cohesion coupled with lower levels of task commitment. The authors theorize that teams experiencing levels of task commitment that exceed their social cohesion would be least likely to experience groupthink symptoms.

Their study consisted of 138 undergraduate females from a southern university. Subjects were divided into 46 three-person groups. The groups were provided a bogus social skills test and a problem-solving skills test. Each group was given a deck of information cards containing partial information concerning the overall desirability of a dorm at a particular university. The subjects were given a training stage and a conflict stage. The training stage involved each subject learning to address the group's task from a different perspective based upon certain cues that were provided. The subjects were then required to assess a desirability rating, but were provided a cue as to the "actual" rating. This provided them the opportunity to make predictions similar to the assessment of the National Review of Higher Education.

The conflict stage involved the creation of discussion groups in which at least one member was provided different informational cues and desirability ratings than the other two subjects. Groups were provided bogus score sheets describing their social and task performance thus far as low or high based upon the scores of their social skills test and the problem-solving skills test. Each group was told it possessed some characteristic that united the members, whether high in social skills ability (i.e., social cohesion) or high in problem-solving ability (i.e., task cohesion). Following placement the groups were told to discuss the findings of the National Review of Higher Education concerning the ideal dormitory. The subjects were told they would be

observed to see how they would discuss the topic rather than expected to reach a solution. A debriefing questionnaire was administered to determine member perceptions of the type of cohesion predominately present within their team.

The findings indicated support for the author's position that teams with low social confidence (i.e., social cohesion) and high task focus (i.e., task cohesion) experience fewer groupthink symptoms. Teams with high social confidence reported more groupthink symptoms. Group members with divergent cues from other members did not report different levels of social confidence or task focus than the other two members. The authors suggest that a desire for consensus possibly mitigated their perceptions of disagreement or difference with the team.

The authors conclude by acknowledging the need for balancing social and task dynamics at work within teams. Social cohesion is needed to encourage team commitment and cooperation. Social cohesion influences morale and the sense of belonging a person develops for the team. Task cohesion is imperative in terms of outcomes. The goal in balancing the two is to reinforce the team's goals, norms, and mission while following procedures that reduce the likelihood that groupthink symptoms will develop. Such teams reap the benefits of cohesion in general and can experience greater productivity.

4. Campbell, K.S., White, C.D., & Johnson, D.E. (2003). Leader-member relations as a function of rapport management. *The Journal of Business Communication*, 40(3), 170-194.

Clear vertical communication between management and subordinates is critical for team efficacy. However, the authors suggest that divergent perceptions of communication quality can exist between leaders and those being led. A hypothesis is made that a potential deterrent to quality communication is poor or absent rapport. Campbell and colleagues recognize that many strategies of leadership communication stress persuasion and control and they suggest that leadership communication should include a relationship orientation. The authors identify communication styles that generally reduce member satisfaction with the team. An eclectic model of leader communication is proposed that respects the presence of competing values while protecting the individual's face (i.e., a sense of value, dignity, and competence) and sociality rights (i.e., sense of fairness, social inclusion/exclusion) needs. Individuals demonstrate their ability to lead by the communication strategies they use with subordinates.

5. Carron, A.V., & Spink, K.S. (1995). The group size-cohesion relationship in minimal groups. *Small Group Research*, 26(1), 86-105.

Cohesion develops within groups, regardless of size, when certain cohesion-building characteristics are present, but the relationship between group size and levels of cohesion has remained a mystery. This study sought to determine if group size would influence the degree of reported cohesion experienced among exercise classes of various sizes. Results indicated that group size effects were present in these groups. That is, smaller groups were found to report higher levels of cohesion than members of large groups. The authors suggest that stronger cohesion in small groups might reflect the likelihood that more communication and interaction occurs in smaller groups, where self-disclosure is more prevalent. A subsequent study

introduced a team-building program and supported the value of conducting team-building exercises as a strategy to improve cohesion.

While small groups reported greater levels of cohesion than members of large groups, the authors recognize that some organizational teams are large by nature. A potential danger for large groups is the formation of subgroups that can diminish performance. They recommend implementing ongoing team-building training as a tool for mitigating group size effects on cohesion.

6. Chan, Z., & Lawson, R.B. (1996). Groupthink: Deciding with the leader and the devil. *Psychological Record*, 46(4), 581-590.

Groupthink symptoms motivate members to seek solidarity foremost. There are **identifiable** determinants for whether or not groupthink will likely develop, including leadership style and the presence of critical input. This study focused on the relationship between groupthink and two leadership styles (directive and participative). Directive leaders typically direct the team towards their preconceived solutions, while participative leaders value collaboration in decision-making. Critical input challenges group consensus by suggesting alternatives or identifying weakness in the current decision, and thus can serve as a deterrent to groupthink.

The study consisted of 92 male and 56 female undergraduate students randomly assigned to groups. Directive and participative leaders were randomly assigned to these groups and some were assigned a "devil's advocate", a member tasked with asserting critical input. Each group was given a Lost at Sea decision-making exercise and was tasked to agree on the order of **importance** for the available survival gear that was provided. The decision reached was subject to a **vote** in each group and the group decision was compared with expert ratings to determine the **quality** of groups' choices. Outside raters conducted a videotape review of the interactions in **order** to calculate disagreements within the two types of teams.

Devil's advocates, though vocal in their teams, had little influence on the quality of the **decisions** made. Gender was not a factor. The significant factor was leadership style. Directive **leaders** were found to lead teams that made poorer quality decisions than participative leaders. **The authors** conclude that leaders need to be careful not to exert undue influence over the **decision-making** in teams, but to seek input so the team can devise the best quality solution, even if **the team** fails to reach consensus on the decision.

7. Cohen, S.G., Mohrman, S.A., & Mohrman, A.M., Jr. (1999). We can't get there unless we know where we are going: Direction setting for knowledge work teams. In R. Wageman (Ed.), *Research on managing groups and teams: Groups in context*, Vol. 2, (pp. 1-31). Stamford, CT: JAI Press.

Cohesive teams frequently communicate team direction. Direction-setting communication involves clarifying team goals, aligning team and organizational goals, and providing a system of

measurement to determine success. The authors studied 108 organizational teams from 26 Fortune 500 companies.

The study found that contextual direction-setting helped to create a shared understanding of priorities, team goals, and methods for accomplishing team goals. The report includes an examination of the challenges faced by companies as they transition into a team-based organizational structure, where this form of communication will be needed.

8. Doolen, T.L., Hacker, M.E., & Van Aken, E.M. (2003). **The impact of organizational context on work team effectiveness: A study of production teams.** *IEEE Transactions on Engineering Management*, 50(3), 285-296.

Organizational context can potentially influence team performance and effectiveness. Twenty-one teams in six varied organizational contexts were examined to determine the characteristics that would serve to enhance effectiveness in varied organizational contexts. Findings supported the importance of management establishing a clear understanding of team purpose that is consistent with organizational goals and providing the resources necessary for goals to be met. An organizational atmosphere that supports communication and cooperation between teams was related to member satisfaction. Organizational support (providing the necessary information and training to be successful) was significantly related to ratings of team effectiveness and member satisfaction.

9. Hodson, G., & Sorrentino, R.M. (1997). **Groupthink and uncertainty orientation: Personality differences in reactivity to the group situation.** *Group Dynamics: Theory, Research, and Practice*, 1(2), 144-155.

The researchers sought to determine if individual differences related to the need to resolve uncertainty within a group interacts with groupthink symptoms. Uncertainty-oriented (UO) individuals are motivated in group situations that resolve uncertainties pertaining to the group's role or function. Certainty-oriented (CO) individuals are more motivated in situations where resolution of uncertainty is not part of the situation. CO individuals seek to maintain clarity about the existing situation rather than resolve uncertainty. CO's are more likely to defer to an expert's opinion and prefer directive leadership styles. UO's emphasize discourse and prefer cooperative effort.

This study included consideration for the timing of leader revelations of personal opinion concerning the task outcome. The study found that CO groups were more influenced by **situational conditions and leadership styles** than UO groups. Leader revelations of opinion served to produce a group norm for CO groups resulting in the reporting of biased decisions over 80% of the time. CO groups experienced less bias (i.e. 39%) in open leadership styles where opinion was given later in the group process. UO groups reported biased decisions approximately 60% of the time regardless of leadership style. The authors conclude that cohesion does contribute to groupthink conditions, but leaders need to be aware of the role communication can play in influencing decision-making.

- 10. Hogg, M.A., & Hains, S.C. (1998). Friendship and group identification: A new look at the role of cohesiveness in groupthink. *European Journal of Social Psychology*, 28, 323-341.**

The concurrence-seeking tendency in groupthink will detract from decision-making ability. This phenomenon has been identified with cohesive groups with high social attraction. The role of friendship as a form of social attraction serves as the focus of this study. The study used 472 undergraduate psychology students divided into four-person groups. Some groups were made of friends (personal attraction) and others were assigned to groups with strangers. One group of strangers was randomly assigned while the other was formed through social attraction selection. Each group selected a leader and each group was given a decision-making task to complete.

Results revealed that groups composed of friends performed better on the decision-making task, gave less deference to the leader, expressed less effort to agree, and exchanged more information so that a quality decision could be reached. Groups characterized by social attraction experienced a lesser quality of decision-making, expressed greater desire for consensus, gave more deference to the leader, and expressed more desire for majority decision-making. The authors conclude that friendship might actually diminish the likelihood that groupthink will develop because members are likely to be more open and honest with each other.

- 11. Hollenbeck, J.R., Ilgen, D.R., LePine, J.A., Colquitt, J.A., & Hedlund, J. (1998). Extending the multilevel theory of team decision making: Effects of feedback and experience in hierarchical teams. *Academy of Management Journal*, 41(3), 269-282.**

The multilevel theory of team decision-making suggests that decisions are made at different levels within the team. These levels include the decision level, the individual level, and the dyadic level. All three levels require that information be effectively dispensed and interpreted. The authors propose that feedback and experience interact with multilevel decision making to improve performance and the quality of the decisions that are made.

The study employed 380 undergraduate students who were divided into four-person teams. Each team was given the task of monitoring simulated airspace to determine if approaching aircraft should be allowed to land or considered aggressive. The teams were divided into those receiving experience and those receiving performance feedback. The experience teams were given an initial three-hour session to practice similar scenarios a week prior to the study. The feedback teams received several sources of feedback during the exercise, including: a drop-down menu, a light to cue the participants that they were fully informed concerning the aircraft, a clock to show how much time remained in the exercise, and a means of communication between members.

Each subject was assigned a workstation and given only partial information pertaining to the aircraft. Each participant was required to make a judgment assessment of how the aircraft should be treated. Decision-making accuracy was defined by the degree of congruence between the leader's decision and the correct decision (the mean absolute error of the team's decision).

Following the leader's decision, team members were given outcome feedback of their performance.

The study found that feedback and experience serve different functions in a multilevel approach to decision-making. Experience was found to improve the relationship between members, but feedback was found to effectively and efficiently disseminate information and to be more influential within the multilevel theory.

12. Houghton, S.M., Simon, M., Aquino, K., & Goldberg, C.B. (2000). No safety in numbers. *Group & Industrial Management*, 25(4), 325-353.

Individuals can have cognitive biases that influence decision-making and increase risks. This has led some to suggest that teams are better decision-makers because they mitigate individual biases. The authors have attempted to determine if teams are more effective decision-makers based upon the introduction of biases related to information processes by measuring risk perceptions at the team and individual levels.

The law of small numbers bias occurs when teams rely upon a small sample of information and assume it represents the whole. Illusion of control assumes that members represent mastery of certain skills germane to the team's purpose and assumes they know best when decisions need to be made. Overconfidence can occur if the team streamlines information assuming it to be conclusive while in reality it is not.

The authors found that the law of small numbers affected risk perceptions at the individual and team levels. Illusion of control decreased the risk perception at both levels to an equal degree. The authors suggest that diversity might prohibit the full assimilation of member skills, which resulted in this factor not proving more significant. Overconfidence was not significant at either level. The authors conclude that increasing member input in decision-making does not guarantee greater effectiveness in decision-making. Teams can make errors that are similar to individuals. The key is to purposefully develop procedures that are protective of effective communication strategies.

13. Manz, C.C., & Neck, C.P. (1995). Teamthink: Beyond the groupthink syndrome in self-managing work teams. *Journal of Managerial Psychology*, 10(1), 7-15.

Self-managing work teams (SMWT) are growing in popularity among many organizations. These teams are often credited with greater productivity as well as increased worker satisfaction and greater commitment to the organization. Groupthink is a concurrence-seeking motivation that can prompt teams to sacrifice quality decision-making for the sake of solidarity and group stability. Groupthink is naturally fostered in teams that develop high levels of social bonding. The authors suggest that a new approach to moderating groupthink symptoms should be considered.

Teamthink is another approach at restoring task focus to a team. It is proposed to impact the team's belief system and self-dialogue and to inspire task-relevant mental imagery of what needs to be accomplished. Teamthink behaviors include the encouragement of divergent views,

open expression of concerns and disagreements, recognition of member input and contribution, openness to non-stereotypical views, and recognition of the ethical issues related to performance. The authors conclude that SMWTs can benefit from teamthink as they begin to challenge the cognitions or beliefs about the team and replace those that deter performance.

- 14. Marks, M.A., Zaccaro, S.J., & Mathieu, J.E. (2000). Performance implications of leader briefings and team-interaction training for team adaptation to novel environments. *Journal of Applied Psychology*, 85(6), 971-985.**

The authors examine the influence of leader briefings and team-interaction training on team performance in routine and nonroutine environments. Seventy-nine teams of undergraduates were assigned a low-fidelity tank simulation. Team-interaction training, leader briefings, and environmental conditions were manipulated. Results support the authors' hypothesis that leader briefs and interaction training would improve performance by creating mental models.

- 15. Mearns, K., Flin, R., & O'Connor, P. (2001). Sharing 'worlds of risk': Improving communication with crew resource management. *Journal of Risk Research*, 4(4), 377-392.**

Teams possess different types of risks depending upon where they operate. Aircrews are unique teams because they confront high risk factors such as safety. Studies have found that team members, including aircrews, do not always share common perceptions of the potential hazards threatening the team. Breakdowns in communication or inadequate situational awareness can lead to mishaps. Professional and social barriers are common obstacles that impede communication and lead to accidents.

The authors sought to determine if human factors training such as Crew Resource Management (CRM) would work among teams in other contexts. Specifically, CRM was applied to offshore petroleum crews. CRM training was adapted for the contextual needs of these teams using six work packages based upon nontechnical skills (situation awareness, communication, fatigue, stress, team working, and decision making). Eight courses were run during 1999 with participants from varied technical fields that were assigned to five North Sea production platforms. Participants from the Offshore Installation Managers attended six of the eight courses. The courses were delivered in various formats (e.g., lectures, group exercises, videos).

Participants completed feedback questionnaires. The training course received generally positive feedback. Production, maintenance, and service crews reported increased awareness of human factors and risk issues. Open and frequent communication is crucial for identifying and avoiding potential errors. A potential weakness of this training is decay over time so the viability of this type of training is contingent upon the commitment of management to ongoing training and periodic re-training of crucial concepts.

16. Merritt, A.C. (1995). Facing the issue. *The CRM Advocate*, 95(4), 1-7.

Cultural background can influence the quality of communication that occurs in the cockpit. The desire to project and protect a positive public self-image (i.e. face-needs) can motivate members to restrict their communication within the team. Face-needs are threatened by the interaction of social distance, level of imposition, and the power distance related to status.

Social distance is reflected in the familiarity between members and the assumption is that social closeness will reduce the potential for embarrassment and loss of face. The level of imposition posits that small impositions are more likely to be received positively and not threaten face-needs. Power distance can influence communication in superior-subordinate relationships especially where there are differential perceptions of power or where national culture discourages corrective subordinate communication.

The author suggests that face-threats result in communication constraints. Open communication is encouraged so information can be fully shared and further communication can be reinforced. The author recognizes that in teams such as aircrews there will likely always be the potential for face-threats so there will always be some degree of indirect communication. She concludes that teamwork training should include skills that assist in interpreting and responding to indirect communication.

17. Moore, R.M. (1997). The positive effects of cohesion on creativity in small groups. *International Social Science Review*, 72(3/4), 84-93.

Teams often rely on creativity to enhance performance and in decision-making. The relationship between the level of attraction members have for the group (i.e., social cohesion) and the level of creativity practiced in the team has not always been conclusive. High social cohesion can lead to groupthink, which should serve to detract from creativity due to the excessive desire for conformity. The author notes that the literature suggests the opposite. High cohesion teams appear to experience the highest levels of creativity.

This study involved 79 groups of three to five people and individuals working alone. Each team or independent agent was presented two paintings, one naturalistic and the other abstract. Groups were asked about the creativity of the artists. The feedback questions asked for group perceptions of artist's ability and creativity, aesthetic quality, and the group's interpretations of the artwork's meaning and symbolism. Four judges were trained in scoring procedures and the responses were transferred to a Likert scale developed for each of the feedback questions. The hypothesis was that high cohesion groups would experience more exchanges of ideas and greater creativity than low cohesion groups or individuals working alone. Low cohesion groups were hypothesized to have similar or lower levels of creativity than individuals working alone since there would be little if any creative interaction in these groups.

Consistent with the author's assumptions, high cohesion groups demonstrated greater creativity in their answers than low cohesion groups. Individuals working independently were more creative than low cohesion groups. The author concludes that significant group

contribution to creativity is primarily obtained in high cohesion groups. Creativity is more likely expressed by individuals working alone than in low cohesion teams.

- 18. Patrashkova-Volzdoska, R.R., McComb, S.A., Green, S.G., & Compton, W.D. (2003). Examining a curvilinear relationship between communication frequency and team performance in cross-functional project teams. *IEEE Transactions on Engineering Management*, 50(3), 262-269.**

Cross-functional teams depend upon information exchanges and the expertise of their members. The authors hypothesize that high and low levels of communication can hinder team performance, leading to a curvilinear relationship between team performance and communication. The authors examined the influence of face-to-face, email, and telephone communication on performance. They found that email and face-to-face communication were curvilinear with performance, but telephone communication was not. They also found that email usage was the only communication medium that increased as distance increased between participants.

- 19. Peterson, R.S., & Behfar, K.J. (2003). The dynamic relationship between performance feedback, trust, and conflict in groups: A longitudinal study. *Organizational Behavior & Human Decision Processes*, 92(1/2), 102-112.**

Task and relationship conflicts are expected within work teams. The assumption has been that task conflict is usually associated with high performance teams and relational conflict is more common in low performance teams. The authors theorize that performance might be related to earlier performance feedback given to the team. Specifically, they argue that member conflict might be related to the nature of the initial feedback.

Sixty-seven groups were studied. Results indicate that initial performance feedback can play an important role in motivating future conflicts. They found that negative initial feedback results in later increases of conflict in both tasks and relationships. However, results also indicated that high early intra-group trust buffered the intensity of later conflicts.

- 20. Pollack, B.N. (1998). The impact of sociophysical environment on interpersonal communication and feelings of belonging in work groups. In J. Sanford and B.R. Rose, (Eds.), *People, places and public policy* (pp. 71-78). Edmond, OK: Environmental Design Research Association.**

Successful teams typically possess a social environment in which members feel a sense of belonging. The factors that contribute to this sense of belonging are the basis for this research. The author researched 105 employees of 19 non-customer service agencies. The study focused on group-level properties such as group cohesion, supervisor support, intensity of ties, and communication among workers. Only group cohesion emerged as exerting a direct effect on respondents' feelings of belonging. Intensity of ties and communication were reported as mediators in the relationship between group cohesion and feelings of belonging. The study concludes that social climate has a greater influence upon interpersonal communication and feelings of belonging than does the physical environment.

- 21. Rasker, P.C., Post, W.M., & Schraagen, J.M.C. (2000). Effects of two types of intra-team feedback on developing a shared mental model in command & control teams. *Ergonomics*, 43(8), 1167-1189.**

Clear communication and feedback are essential for cohesive teams. The authors emphasize the role of communication in command-and-control teams. Command-and-control teams (C&C) are composed of at least two members who work toward a common goal and have been assigned specific roles that require dependency upon each other. C&C teams operate in complex environments that rapidly change. Frequent information exchanges are required with limited time available.

Cohesive C&C teams develop shared mental models and encourage feedback. Shared mental models are a shared body of information and expectations that provide the team with a flexible mechanism for managing and exchanging information. The greater the overlap of mental models among members the more effective the team will be at adapting to changing conditions and coordinating activities. Feedback is one component that enhances shared mental models. The study reports that both performance monitoring and self-correction are important. However, performance monitoring allows for adjustments during task performance while self-correction allows only for a review of performance.

- 22. Street, M.D. (1997). Groupthink. *Small Group Research*, 28(1), 72-93.**

The groupthink model posits that teams can develop excessive social cohesion that reduces the quality of communication because members seek concurrence at the expense of critical feedback. The unfortunate outcome is the loss of quality decision-making. There has been disagreement concerning the viability of this model and research to support it. This has led some to suggest that the groupthink model needs revision or needs to be discarded.

The author examines recent literature pertaining to cohesion and groupthink. He reports that groupthink appears to be related to excessive social cohesion within teams. Groupthink seems to develop in response to the presence of other antecedent variables such as excessive interpersonal attraction between members, the lack of procedures to mitigate groupthink symptoms, and the presence of external threats to the self-esteem of the team. Consideration also needs to be given to time pressure, the effects of group norms, the nature of the task at hand, and the role of leadership as potential sources for the creation of groupthink.

The author suggests that groupthink does have merit as a descriptive characteristic of some teams. He contends that rather than discarding the groupthink model more research attention should be given to reexamining the problematic features of it. This will likely require a redefinition of group cohesion as it applies to groupthink.

23. Weinberg, R., & McDermott, M. (2002). A comparative analysis of sport and business organizations: Factors perceived critical for organizational success. *Journal of Sport Psychology (London)*, 14(4), 282-298.

Sports and organizational psychology have identified numerous factors that contribute to enhanced cohesion and teamwork. Factors include the significance of quality leadership, the fostering of group cohesion, and the critical role that communication plays in enabling teams to function. This qualitative study of twenty sports and business leaders found that both kinds of teams share many commonalities that serve to enhance performance. The primary differences were communication-related. Business leaders stressed the need for honesty and for being a reflective listener to team member input. Sports leaders stressed the importance of interactions between members and having positive reinforcement in their communication. The authors conclude that further research needs to focus on finding ways to transfer team-building skills and principles between these two fields.

Appendix C
Cooperation

Article Reviewed	Page
Austin, J.R. (1997). A cognitive framework for understanding demographic influences in groups. <i>International Journal of Organizational Analysis</i> , 5(4), 342-359.	C-4
Boone, K.S., & Beitel, P. (1997). The effects of the win/loss record on cohesion. <i>Journal of Sport Behavior</i> , 20(2), 125-134.	C-4
Cannon-Bowers, J.A., & Salas, E. (1998). Team performance and training in complex environments: Recent findings from applied research. <i>Current Directions in Psychological Science</i> , 83-87.	C-4
Carless, S.A., & de Paola, C. (2000). The measurement of cohesion in work teams. <i>Small Group Research</i> , 31, 71-88.	C-5
Carron, A.V., Brawley, L.R., Eys, M.A., Bray, S., Dorsch, K., Estabrooks, P., Hall, C.R., Hardy, J., Hausenblas, H., Madison, R., Pasekvich, R., Patterson, M.M., Prapavessis, H., Spink, K.S., & Terry, P.C. (2003). Do individual perceptions of group cohesion reflect shared beliefs? An empirical analysis. <i>Small Group Research</i> , 34(4), 379-405.	C-5
Chang, A., & Bordia, P. (2001). A multidimensional approach to the group cohesion/group performance relationship. <i>Small Group Research</i> , 32(4), 379-405.	C-5
De Dreu, C.K.W. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. <i>Journal of Applied Psychology</i> , 88(4), 741-749.	C-6
Eys, M.A., Hardy, J., Carron, A.V., & Beauchamp, M.R. (2003). The relationship between task cohesion and competitive state anxiety. <i>Journal of Sports and Exercise Psychology</i> , 25, 66-76.	C-6
Gammage, K.L., Carron, A.V., & Estabrooks, P.A. (2001). Team cohesion and individual productivity and the identifiability of individual effort. <i>Small Group Research</i> , 32(1), 3-17.	C-6
Gibson, C.B., & Zellmer-Bruhn, M.E. (2001). Metaphors and meaning: An intercultural analysis of the concept of teamwork. <i>Administrative Science Quarterly</i> , 46, 274-303.	C-7
Griffith, J. (2002). Multilevel analysis of cohesion's relation to stress, well-being, identification, disintegration, and perceived combat readiness. <i>Military Psychology</i> , 14(3), 217-239.	C-7
Grubb, G.N., Simon, R.A., Leedom, D.K., & Zeller, J.L. (1995). <i>Effect of crew composition on AH-64 attack helicopter mission performance and flight safety</i> . (ARIARDA/DRC Working Paper 94-06). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A398-770).	C-8
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Keyton, J. (1999). Analyzing interaction patterns in dysfunctional teams. <i>Small Group Research</i> , 30(4), 491-518.	C-10
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Lawler, E.J., Thye, S.R., & Yoon, J. (2000). Emotion and group cohesion in productive exchange. <i>American Journal of Sociology</i> , 106(3), 616-657.	C-11
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Appendix C
Annotations

1. Austin, J.R. (1997). A cognitive framework for understanding demographic influences in groups. *International Journal of Organizational Analysis*, 5(4), 342-359.

This study focuses on the effects of demography or diversity upon work groups. The author reports diversity increases innovation and creative thinking. However, excessive diversity can decrease cohesion due to increased conflicts. Increased conflicts are attributed to reductions in active processing within the group. Despite the probability that a threshold exists where diversity becomes a negative influence, this study posits that training can mitigate these negative effects.

2. Boone, K.S., & Beitel, P. (1997). The effects of the win/loss record on cohesion *Journal of Sport Behavior*, 20(2), 125-134.

Sport teams rely upon cohesion to be successful. The assumption is a team's win/loss record will influence team cohesion. The authors examined the influence a team's record has upon cohesion. They hypothesized that winning would serve to enhance cohesion while a losing record would diminish it. Sixty-five baseball players were included in this study. Findings supported that cohesion is a multidimensional phenomenon and dynamic in nature. Cohesion responds to changes in success. Losing had a negative effect on both task and social cohesion, however winning merely maintains current task and social cohesion levels.

3. Cannon-Bowers, J.A., & Salas, E. (1998). Team performance and training in complex environments: Recent findings from applied research. *Current Directions in Psychological Science*, 83-87.

Teamwork is an important part of team performance. Two skills are identified as an important influence upon team performance. First, there are skills related to the technical aspects of the task. Second, there are skills associated with being an effective member of the team. Both sets of skills are important for creating shared mental models and implicit coordination, which can serve to mitigate high-stress conditions.

The authors provide several team-training strategies that can improve teamwork. Cross-training involves rotating members through different task roles so they develop initial familiarity with the roles of other team members. Guided team self-correction includes feedback, problem-solving, and performance monitoring. Team coordination and adaptation training involves shifting coordination strategies when workload demands are rendering current strategies ineffective. Assertiveness training provides the skills that encourage members to voice concerns over team decisions. Team-leader training focuses on developing coaching-facilitator skills within leadership.

4. Carless, S.A., & de Paola, C. (2000). The measurement of cohesion in work teams. *Small Group Research*, 31, 71-88.

The authors sought to determine if cohesion should be differentiated between social and task cohesion. They studied 120 employees of an Australian company who worked in teams. Each employee was given a variation of the Group Environment Questionnaire to evaluate perceptions of how cohesion affects outcomes. Their findings suggest that task cohesion has a stronger relationship with outcomes than social cohesion or a member's attraction to the group. They found that social cohesion may serve as a precursor for later task commitment. The authors suggest that successful teams need both forms of cohesion. They suggest that team leaders need to encourage cooperative task-related behavior and communication for both social and task cohesion to develop.

5. Carron, A.V., Brawley, L.R., Eys, M.A., Bray, S., Dorsch, K., Estabrooks, P., Hall, C.R., Hardy, J., Hausenblas, H., Madison, R., Pasekvich, R., Patterson, M.M., Prapavessis, H., Spink, K.S., & Terry, P.C. (2003). Do individual perceptions of group cohesion reflect shared beliefs? An empirical analysis. *Small Group Research*, 34(4), 468-496.

Team members commonly develop beliefs and perceptions about teams. As this information is shared a degree of processing will occur and individuals will determine a level of agreeability with the information they have received. This study sought to determine to what extent these shared beliefs and levels of agreeability influence the level of cohesion that develops in teams. Levels of agreeability are assumed to reflect levels of member consensus.

This study reviewed information from numerous studies in which the Group Environment Questionnaire (GEQ) had been administered in the past. Responses were gathered from 2,107 athletes representing 192 teams of various types. Teams were divided into interdependent (e.g., hockey, volleyball) and coactive/independent (e.g., tennis, track and field). The GEQ was administered and a subsequent scale was created for the index of agreement.

Findings indicate that information is more likely to be shared around a team's task rather than stressing how well the group satisfies the athlete's personal needs. The amount of interaction did not prove to be related to the level of agreement about cohesiveness. The level of cohesion is linked to the level of consensus found in the team. Members were found to be more likely to show higher consensus when they perceive greater cohesion in the team.

6. Chang, A., & Bordia, P. (2001). A multidimensional approach to the group cohesion/group performance relationship. *Small Group Research*, 32(4), 379-405.

Cohesion is increasingly accepted as a multidimensional construct that includes task and social components. This study examined the relationship between group cohesion and group performance. Task and social cohesion were utilized to measure perceptions of group effectiveness and system viability. This study supported a one-to-one relationship between group cohesion and group performance. Task cohesion was the prominent influence reflected in self-rated performance evaluations. Social cohesion was the only predictor of system viability. Group cohesion was found to be the antecedent, not the consequence, of group performance.

7. De Dreu, C.K.W. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology*, 88(4), 741-749.

This study provides a meta-analytical evaluation of the relationship between conflict, performance, and member satisfaction. Results revealed strong and negative correlations between relational conflict, performance, and member satisfaction. Findings also suggested a strong and negative correlation between task conflict, performance, and member satisfaction. The negative correlation between conflict and performance was stronger in highly complex tasks like decision-making and complex environments like project teams. The relationship between task conflict and performance weakened when task conflict and relationship conflict were weakly correlated.

8. Eys, M.A., Hardy, J., Carron, A.V., & Beauchamp, M.R. (2003). The relationship between task cohesion and competitive state anxiety. *Journal of Sports & Exercise Psychology*, 25, 66-76.

Athletes commonly report pre-competition anxiety. Anxiety can be beneficial or debilitating. The authors sought to determine the relationship between pre-competition anxiety and perceptions of task cohesiveness within the team. Their study found that competition anxiety can be facilitative when task cohesion is high. They found that athletes experiencing facilitative anxiety also experienced improved mood, increased self-esteem, increased belief in the efficacy of the group to withstand disruption, and a greater willingness to disperse responsibility for failure throughout the team. Another finding is that how anxiety is interpreted can influence whether it becomes facilitative or debilitating.

9. Gammage, K.L., Carron, A.V., & Eastabrooks, P.A. (2001). Team cohesion and individual productivity and the identifiability of individual effort. *Small Group Research*, 32(1), 3-17.

These authors investigated the relationship between productivity norms and identification of effort on the cohesion-performance relationship in team sports. Norms of productivity are the expectations team members share of individual effort in terms of task fulfillment and maintaining social relationships in the team. Identification of effort is the recognition players receive based upon their willingness to train and contribute to the team's success.

Their study investigated perceptions of how productivity norms and identification of effort influence a player's willingness to train in off-season. The research involved scored scenarios depicting various levels of cohesion, standards of productivity, and the identifiability of an individual's effort. The study found the probability for off-season training was higher for the high-cohesion, high-norms scenario than for the high-cohesion, low-norms scenario. Identification of effort was not found to be significant, but the researchers suggest that task commitment might be so high it mitigated the influence of identifiability. The researchers conclude that high cohesion and high norms should lead to the best performance, high cohesion and low norms should lead to the worst performance, and low cohesion leads to intermediate levels of performance regardless of norms.

10. Gibson, C.B., & Zellmer-Bruhn, M.E. (2001). **Metaphors and meaning: An intercultural analysis of the concept of teamwork.** *Administrative Science Quarterly*, 46, 274-303.

Culture can influence descriptions of teamwork metaphors. Information was gathered from six multinational cultures concerning metaphors that describe teamwork in those organizations. Five metaphors of teamwork (military, family, sports, community, family, and associates) emerged from the interviews. These metaphors influenced patterns of expectations about membership, team roles, and team goals. These metaphors were reflected in the national and organizational culture of the corporation.

Corporations that were characterized as authoritarian or controlling typically approached teamwork using metaphors of military or family. Individualistic organizations emphasized sports or associates metaphors. The choice of metaphors suggested the leadership styles typically found in these teams and shape expectations of how the team will function. The authors conclude that managers need to recognize that teamwork will be perceived in different ways depending upon the values of the cultures involved.

11. Griffith, J. (2002). **Multilevel analysis of cohesion's relation to stress, well-being, identification, disintegration, and perceived combat readiness.** *Military Psychology*, 14(3), 217-239.

Cohesion can have an influence on the Soldier's perceptions of his unit and the unit's readiness for combat. Responses were gathered from 104 combat arms companies concerning their military experiences. Findings indicate the perceptions of leaders' task and social competence appear linked to perceptions of well-being, identification, and solidarity (lack of disintegration) at the individual and group levels. Perceptions of Soldiers' task competence are related to perceptions of group combat readiness at both levels.

Findings indicate individual-level implications for cohesion. Soldier emotional support was associated with positive outcomes such as well-being, identification, solidarity, and perceptions of individual and combat readiness at the individual level. Leader emotional and task support has a buffering effect on the influence of stress and other negative outcomes.

Soldier task support enhances performance and had a positive relationship with perceived combat readiness at both levels. Task support from leaders and Soldiers and emotional support from leaders appears to lessen the likelihood that Soldiers will leave the Army. The author suggests that transformational leadership likely embodies the desired qualities identified in this study.

12. Grubb, G.N., Simon, R.A., Leedom, D.K., & Zeller, J.L. (1995). *Effect of crew composition on AH-64 attack helicopter mission performance and flight safety*. (ARIARDA/DRC Working Paper 94-06). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A398 770)

The anecdotal assumption is that battle-rostering will result in improved performance due to the familiarity members develop over time. This study employed thirty-three aviators that were divided into battle-rostered crews and standardized crews. Each team flew two simulation exercises as battle-rostered crews and two as standardized crews. Scoring reflected crew performance, crew ratings, and instructor ratings. Assessment of crew behaviors included task performance, mission performance, flight safety, and familiarity effect for each crew condition.

Findings did not support the popular assumption that battle-rostered crews would outperform standardized crews. Battle-rostered crews did demonstrate more implicit coordination in their performance. However, implicit coordination produced mixed results in the crew behaviors utilized in this study. Members of battle-rostered crews rated themselves as 50% more confident than standardized crews and this overconfidence was identified as a possible contributor to the mistakes made by battle-rostered crews. Battle-rostered crews reported their workload as easier and their coordination style as more implicit.

13. Harrison, D.A., Price, K.H., & Bell, M.P. (1998). *Beyond relational demography: Time and the effects of surface- and deep-level diversity on work group cohesion*. *Academy of Management Journal*, 41(1), 96-107.

Organizational and sports teams are increasingly reflecting diversity. The increasing diversity of teams merits further investigation of how individual differences affect cohesion and teamwork. Prejudice can deteriorate the social climate of the team and obstruct efforts to maintain team focus upon tasks and goals. Consideration is warranted to identify the diversity-related factors that are most influential on teams.

The authors gathered responses from hospital workers and employees from the deli-bakery sections of 32 grocery stores. The study addressed diversity in terms of surface-level (i.e., age, ethnicity, and sex) and deep-level (i.e., member attitudes, beliefs, values). Their findings indicate that teams first encounter surface-level diversity. Over time, as interactions occur, surface-level diversity is replaced by deep-level diversity as similarities of beliefs and values have been recognized. The authors surmise that teams can effectively move beyond surface-level diversity by allowing for interaction on task-relevant activities over time.

14. Helmreich, R.L., Merritt, A.C., & Wilhelm, J.A. (1999). *The evolution of crew resource management in commercial aviation*. *The International Journal of Aviation Psychology*, 9(1), 19-32.

Crew Resource Management (CRM) has experienced its own evolution over the years since its inception in the early 1980s. The authors recognize five generations of CRM. The first generation stressed the importance of interpersonal skills in the cockpit. The second generation stressed group dynamics and focused on issues such as situation awareness, team building,

briefings, and stress management. The third generation stressed human factors concerns and incorporated the entire crew into training. The fourth generation adapted to the new demands of automation in the flight industry and began to export CRM to airlines for their adaptation to their specific needs. Problems resulted because not all organizations were effective in teaching CRM and the skills were found to decay over time without ongoing training.

The fifth generation of CRM has witnessed a milestone. Hindsight suggests that a strategy of attempting to eliminate all crew errors is likely impractical. This has been highlighted by the exportability problems related to CRM. Instead, the fifth generation of CRM emphasizes error management. It is assumed that crews will make errors eventually. CRM seeks to train crews in ways to recover and adjust when errors have been made so they will not be repeated.

The authors posit that the issue for CRM is creation of effective responses to errors. They point out that the organizational response to errors can have a tremendous impact on how teams react when errors occur. They suggest that organizations using CRM become "safety cultures" that deal with errors nonpunitively and proactively.

- 15. Jones, P.E., & Roelofsma, P.H.M.P. (2000). The potential for social, contextual and group biases in team decision-making: Biases, conditions and psychological mechanisms. *Ergonomics*, 43(8), 1129-1152.**

Teams will engage in decision-making as part of task performance. The quality of these decisions will influence the cohesion and productivity the team will experience. Social dynamics can shape decision-making in the form of biases. Biases addressed in this study include false consensus, groupthink, group polarization, and group escalation of commitment. False consensus is the overestimation of the degree of similarity between team members and may result in biased judgments if the perception is not challenged. Groupthink occurs when teams are more concerned with reaching consensus than reasoning through decisions. Group polarization results when a position is held by a majority of the group but is intensified as a result of group discussion. Group escalation of commitment involves remaining committed to a course of action despite the evidence that it is failing.

Group biases can emerge even when teams are creating mental models that should serve the team in times of stress. The authors suggest that biases can develop when team members develop erroneous assumptions of other members' perceptions or when member interactions deviate from a task or team-building focus. Jones and Roelofsma conclude that further research is warranted concerning the role of social factors as an influence upon decision-making.

- 16. Jordan, M.H., Field, H.S., & Armenakis, A.A. (2002). The relationship of group process variables and team performance: A team-level analysis in a field setting. *Small Group Research*, 33(1), 121-150.**

Fifty self-managed military teams were examined over a 5-week period. The teams were composed of 648 officers and focused on group potency, social cohesion, and team-member exchange. Group potency is the collective belief by team members that the team can be effective across tasks and has some impact on subsequent team success. The study found that perceptions

of potency begin early in team development. Leaders are encouraged to construct early successes and implement steps that act as antecedents of potency including developing effective communication, encouraging cooperation, and reinforcing team efficacy for meeting team goals.

- 17. Karau, S.J., & Hart, J.W. (1998). Group cohesiveness and social loafing: Effects of a social interaction manipulation on individual motivation within groups. *Group Dynamics*, 2(3), 185-191.**

Many organizational and sports teams encounter problems due to the presence of social loafing. Social loafing occurs when an individual exerts less effort on collective tasks rather than individual tasks. This can be disastrous for a team in terms of productivity and cohesion. Social loafing is frequently an indicator of non-cohesive teams.

The authors investigated the influence of social loafing among cohesive teams. Fifty-nine teams were provided a controversial issue to discuss. The teams reported strong support, strong disagreement, or mild disagreement in their consensus on the issue. Strong support teams were considered high cohesion. Strong disagreement within the team was treated as low cohesion. Mild disagreement teams were treated as control groups. Each team was given an idea-generation task to address the issue. High cohesion teams were found to be most productive. Low cohesion teams and control teams were found to engage in social loafing during the exercise.

- 18. Karau, S.J., & Williams, K.D. (1995). Social loafing: Research findings, implications, and future directions. *Current Directions in Psychological Science*, 4(5), 134-140.**

Social loafing is a reduction in motivation and effort when individuals work collectively. Social loafing affects productivity and can initiate member conflicts once perceived. Feelings of inequity emerge when members believe they must provide more effort than others. Theories surrounding the causality of social loafing generally emphasize certain components of the individual's relationship with the other members, leadership, and the team as an organizational unit.

The authors examined four of the common theories of social loafing including social impact, arousal reduction, evaluation, and the dispensability of effort. Their findings supported that social loafing composes a collective effort model. The model proposes that individuals will willingly exert effort on a collective task to the degree they expect their efforts to be instrumental in obtaining outcomes they personally value. The authors conclude by offering suggestions for mitigating the influence of social loafing.

- 19. Keyton, J. (1999). Analyzing interaction patterns in dysfunctional teams. *Small Group Research*, 30(4), 491-518.**

Teams can experience conflict if one member causes relational confusion within the team. Keyton cites the work of Stohl and Schell and their theory that if one member begins to initiate relational conflict the team will begin to lose task commitment as it attempts to regain

homeostasis in the team. Such a member is termed a primary provoker. Primary provoker behavior can emerge from perceptions of possessing the only "correct" meaning of the situation, the belief that only they know what is best, and from the provoker providing more emotional energy and time than is required.

Characteristics of teams that are ideal for primary provokers generally occur in teams with ineffective structures. These teams often have weak leadership, ambiguous roles, and high task interdependence. The social dynamics are normally unhealthy and deference is given to idiosyncrasies of members. This opportunity allows primary provokers a means to exert their influence as they pull the other team members into the dysfunction. Productivity decreases over time as the team is consumed with social goals rather than task goals.

20. Knouse, S.B., & Dansby, M.R. (1999). Percentage of work-group diversity and work-group effectiveness. *Journal of Psychology*, 133(5), 486-494.

Organizational and sports teams are increasingly reflecting diversity. Diversity can be advantageous or detrimental to teams. The authors sought to determine how much diversity is conducive for teams and at what point diversity detracts from team effectiveness. They found that when diversity in teams did not exceed 30% the influence was generally positive. However, when work group diversity passed 30% (50% for women) diversity became a negative influence as tension and conflict increased. The authors suggest this might be due to intra-group competition or power differentials. The authors conclude that team building with diverse members requires a balance between pursuing cohesion and eliciting the unique contribution each member brings to the team.

21. Knouse, S.B., Smith, A., & Smith, P. (1998). *Keeping 'on task': An exploration of task cohesion in diverse military teams.* (DEOMI Series Pamphlet 98-1). Patrick Air Force Base, FL: Defense Equal Opportunity Management Institute. (AD A359 547)

Military teams are composed of diverse members that must learn to cooperate under stressful conditions. Diversity can present challenges for unit leaders if the interpersonal dynamics within the team are dysfunctional, but team productivity will likely suffer if they become focused on social dynamics. Rather, the authors propose that building cohesion among diverse teams should focus upon task rather than social aspects. Meta-analytical findings suggest the most effective means of mitigating the potential negative influence of diversity is to stress task commitment.

22. Lawler, E.J., Thye, S.R., & Yoon, J. (2000). Emotion and group cohesion in productive exchange. *American Journal of Sociology*, 106(3), 616-657.

Social exchange theory posits that cohesion develops within teams over time as members interact. Frequent positive interactions lead to positive emotions that strengthen a member's bond with the group and reduce uncertainty about other group members. People normally interact with the same people when success occurs but move to others when failure occurs. The authors suggest that positive exchanges; a) are shaped by networking structures that promote

exchanges with some individuals and not others; b) produce a positive affective response; and c) form an attachment with individuals or groups perceived to be the source of positive feelings.

Their study involved teams of three actors who were charged with the task of negotiating a joint venture that requires the assent of all members. The researchers found that the emotional/affective and uncertainty reduction effects are critical to producing cohesion and commitment. The authors conclude that the primary motivating force for member exchanges and commitment to groups is that the interactions are positive and a collective reward can be gained through joint activity. The prospect of this reward produces affective and cognitive responses that encourage cohesion and commitment.

23. MacMillan, J., Entin, E.E., Entin, E.B., & Serfaty, D. (1994). *Structuring and training high-reliability teams*. (ARI Technical Report 632). Alexandria, VA: U.S. Army Research Institute of the Behavioral and Social Sciences. (AD A302 903)

Research on crew coordination in the cockpit supports the suggestion that cooperation improves performance. This study examined the importance of crews developing congruent mental models of their mission, situational awareness, and each other. It included responses to crew questionnaires and instructor pilot ratings. Assessments included the congruence of crew mental models, the quality of crew teamwork, the subjective workload experienced by the team, and the crew's performance.

Crews with more congruent models demonstrated superior teamwork. The congruent mental models supported crew communication and cooperation, which resulted in superior teamwork. Superior teamwork enabled crewmembers to maintain coordination even in high workload situations. Superior teamwork was associated with lower perceived workloads and higher levels of mission performance.

24. Naff, K.C., & Thompson, R.C. (2000). *The impact of teams on the climate for diversity in government: The FAA experience*. (FAA Final Report DOT/FAA/AM-00/27). Washington, D.C.: Federal Aviation Administration. (AD A382 809)

The authors examined the FAA's approach to addressing potential personnel issues related to diversity. Three measures of diversity climate were examined: a) employee perceptions of the agency's success in eliminating a hostile work environment, b) success of the Model Work Environment plan, and c) personal support for the Model Work Environment goals. Demographic factors (i.e. minority status, age, tenure, gender, status, and work setting) were controlled.

The results suggest that working as a member of a work team is related to improved perceptions of the diversity climate of the organization. Teamwork seemed to motivate attitudes supporting a better diversity climate. However, the relationship between perceptions of inappropriate behavior and teamwork was not as strong. The authors conclude that teamwork appears to enhance employee attitudes of improving diversity climate, but does not extend to noticeably changing behavior.

- 25. Nullmeyer, R.T., & Spiker, V.A. (2003). The importance of crew resource management in behaviors in mission performance: Implications for training evaluation. *Military Psychology, 15*(1), 77-96.**

Crew Resource Management (CRM) has grown in popularity as a teamwork training package, but empirical support for a link with performance has been weak in the findings of some research. This study sought to find support for a link between CRM and performance by means of instructor comments and over-the-shoulder evaluations of teams in tactical simulators. Instructors reported that CRM problems in crews were normally related to communication and decision-making. Over-the-shoulder evaluations revealed that the most effective crews exhibited certain CRM behaviors, like the presence of a single leader and the willingness to alter plans as mission conditions change.

- 26. Oliver, L.M., Harman, J., Hoover, E., Hayes, S.M., & Pandhi, N.A. (2000). A quantitative integration of the military cohesion literature. *Military Psychology, 11*(1), 57-83.**

Considerable research has been conducted examining the effects of cohesion in military units. This meta-analytical study included 39 samples consisting of 37,226 subjects from various military units and nations. Seven effects were analyzed: group performance, individual performance, job/military satisfaction, retention, well-being, readiness, and indiscipline.

Support was found for the relationship between cohesion and performance. Cohesion was positively related to retention, well-being, and readiness. Cohesion was inversely associated with indiscipline. The authors suggest that further research is warranted and that cohesion should be treated as a multidimensional construct.

- 27. Paris, C.R., Salas, E., & Cannon-Bowers, J.A. (2000). Teamwork in multi-person systems: A review and analysis. *Ergonomics, 43*(8), 1052-1075.**

The authors set forth the goal of determining how to transform teams of experts into expert teams. They distinguish between teams and small groups, the primary difference being that teams form to perform a task. Three themes emerge in the literature that identifies avenues through which successful teams are created. These avenues include team selection, task design, and team training. Successful teams choose their members carefully. These teams are assigned a task that requires cooperative effort to accomplish. Training requires that members receive adequate skills training through whatever means are technologically available. The authors add that team building should include feedback and an evaluation component so progress can be measured.

- 28. Rempel, M.W., & Fisher, R.J. (1997). Perceived threat, cohesion, and group problem solving in intergroup conflict. *International Journal of Conflict Management, 8*(3), 216-234.**

This study examined the impact of perceived threat and cohesion on the ability of a group to problem solve. Social conflict was introduced into the groups. The study found that groups

experiencing high and increasing levels of cohesion experienced a decrease in problem solving effectiveness regardless of the level of threat introduced. Groups with stable cohesion experienced decreases in problem solving ability when high perceived threat was introduced. This was consistent with groupthink theory, which states that when an external threat is introduced to a group the result is decreased decision-making ability.

- 29. Salas, E., Burke, C.S., & Cannon-Bowers, J.A. (2000). Teamwork: Emerging principles. *International Journal of Management Reviews*, 2(4), 339-356.**

The authors sought to identify principles applicable to building teamwork in organizational teams. They suggest that teamwork is a multidimensional construct that is dynamic and difficult to study. The authors put forward seven characteristics of teamwork. However, the authors note that models for developing teamwork must be flexible, adaptive, and applicable to the type of team. Cooperative effort is imperative.

- 30. Salas, E., Burke, C.S., & Samman, S.N. (2001). Understanding command and control teams operating in complex environments. *Information Knowledge Systems Management*, 2, 311-323.**

Command-and-control teams are composed of highly skilled members that come together to work interdependently on complex projects under frequently ambiguous conditions. Such teams are found in industry and describe aircrews. Command-and-control teams are decision-making teams relying upon situation assessment, planning, development of action plans, and implementation of plans. These teams require: a) clear and concise communication, b) a common understanding of coordination requirements, and c) effective team leadership. They engage in solution rehearsals, develop shared situation awareness, follow standard operating procedures, and encourage performance monitoring. The authors propose that building cohesion in these teams entails promoting and maintaining shared cognitions, overcoming the influence of distance on communication, creating synergy, and building trust.

- 31. Salas, E., Fowlkes, J.E., Stout, R.J., Milanovich, D.M., & Prince, C. (1999). Does CRM training improve teamwork skills in the cockpit? Two evaluation studies. *Human Factors*, 41(2), 326-343.**

The authors conducted two studies using naval aviators and aircrews. The first study concentrated on teaching four CRM skills (i.e., communication, assertiveness, mission analysis, and situational awareness) and the second taught all seven (i.e., decision-making, assertiveness, mission analysis, communication, coordination, leadership, adaptability, and situational awareness). Subjects were evaluated on four levels: a) attitudes towards teamwork skills in the cockpit, knowledge of teamwork principles, reactions to CRM training, and use of skills during a simulated flight. Results were gathered primarily through questionnaires and crew performance in the simulator.

Findings supported the position that CRM would improve performance. Subjects from the first study recorded higher performance than baseline crews on the simulation exercise and reported positive attitudes toward the use of teamwork in the cockpit and greater knowledge of

teamwork principles. Subjects from the second study reported positive attitudes towards CRM training and greater knowledge of teamwork principles. They performed well in the simulator. The pilots were unchanged in their attitudes towards using teamwork in the cockpit suggesting these pilots already had positive attitudes towards teamwork in the cockpit. The authors conclude that CRM-type training is an important strategy for teamwork development and research should seek to apply CRM to other organizational contexts.

- 32. Sargent, L.D., & Sue-Chan, C. (2001). Does diversity affect group efficacy? The intervening role of cohesion and task interdependence. *Small Group Research*, 32(4), 426-450.**

Racioethnic diversity can serve as an influence upon team processes. The authors examined the influence of racioethnic diversity upon perceptions of group efficacy. Their study of 42 student project groups found that teams with more racioethnic diversity reported higher levels of task-specific and overall group efficacy. They found that low cohesion and less racioethnically diverse groups possessed the lowest levels of group efficacy. Racially diverse groups with low cohesion reported greater perceptions of efficacy than low cohesion, homogeneous teams. The authors found social cohesion and task interdependence to be essential for diversity to produce positive results.

- 33. Shepperd, J.A., & Taylor, K.M. (1999). Social loafing and expectancy-value theory. *Personality and Social Psychology Bulletin*, 25(9), 1147-1158.**

Expectancy value theory suggests that goal-directed behavior is based upon the assumption that performance depends upon effort, outcomes depend upon performance, and that outcome value exists. In other words, the understanding that personal reward awaits positive outcomes is likely to motivate goal-directed behavior. Social loafing can result if the individual does not perceive value in team effort.

The authors investigate the role of instrumentality in two experiments involving 193 college students. The first experiments revealed that collective participants exerted more effort when they perceived a contingency between individual performance and group performance. The second experiment found that collective participants worked hard when they perceived a direct relationship between group performance and outcomes. The authors conclude that rehearsing the link between performance and outcome can be an effective strategy for mitigating social loafing.

- 34. Siebold, G.L., (1999). The evolution of the measurement of cohesion. *Military Psychology*, 11(1), 5-26.**

The measurement of cohesion has changed over the years. Early attempts to measure cohesion were difficult because it was defined with vague terminology. Part of the motivation to research more effective ways of measuring cohesion comes from military research since cohesion is a significant characteristic of successful units.

Most early usage of cohesion was merely descriptive. The 1930s witnessed a new development in conceptualizing and measuring cohesion with the new attention given groups by researchers such as Lewin and Moreno. Small group research became prominent in the 1970s as researchers began to study individual perceptions of group membership and attractiveness. Applied research has assumed the lead in studying cohesion measurement since the 1980s.

Applied research has resulted in new ways of conceptualizing and measuring cohesion. Due mostly to the efforts of sports psychology cohesion has been recognized as multidimensional and consisting of task- and social-related dynamics. Measurement efforts have been enhanced by the advent of questionnaires such as the Group Environment Questionnaire that measures cohesion across different dimensions.

Another area of applied research is military cohesion. The Walter Reed Army Institute of Research (WRAIR) utilized a medical model approach to cohesion focusing on the COHORT manning system. COHORT kept Soldiers together from the time of their entrance to the Army until their initial tour of duty was over. Questionnaires were used to measure Soldiers' perceptions of their units, including cohesiveness, and those in the COHORT system reported higher levels of cohesion and positive attributions for their units.

The U.S. Army Research Institute (ARI) has adopted a training approach in researching cohesion. This framework seeks to identify dynamics conducive to cohesion and to develop training tools to implement these principles. Feedback usually requires respondents to act as observers and to rate a specific concept that applies to their group rather than rate their particular performance. The assumption is that this depersonalized rating system will result in more objectivity and will improve validity and reliability.

Siebold concludes that cohesion research has come a far distance since its early days. However, much more needs to be studied. Future research should consider revising definitions of concepts related to cohesion. Further attention should be given to developing and revamping current measures of cohesion that are reflective of the changing characteristics of teams.

35. **Smith, B.N., Kerr, N.A., Markus, M.J., & Stasson, M.F. (2001). Individual differences in social loafing: Need for cognition as a motivator in collective performance. *Group Dynamics*, 5(2), 150-158.**

Numerous factors can motivate social loafing. Social loafing is a reduction of individual effort in collective attempts to obtain goals. Often these factors are identified as interpersonal or needs-based in orientation. Few studies have examined the role of individual differences among those who engage in social loafing.

The authors investigated the likelihood that individuals with a high need for cognition would engage in social loafing if the tasks were not cognitively engaging. Their study was divided among those with low cognition needs and those with high cognition needs. Each group was assigned collective and coactive tasks to complete. Those with low need for cognition performed better on coactive task than collective. The high cohesion teams performed just as

well on coactive tasks as collective ones. They conclude that individuals with high cognition needs are less likely to engage in social loafing if the task is cognitively meaningful.

36. Spiker, V.A., Nullmeyer, R.T., Tourville, S.J., & Silverman, D.R. (1998). *Combat mission training research at the 58th special operations wing: A summary*. (AL/HR-TR-1997-0182). Mesa, AZ: United States Air Force Research Laboratory. (AD A353 096)

Crew Resource Management (CRM) focuses on developing teamwork and cooperation between members of specialized teams such as aircrews that often encounter high-risk environments. CRM addresses areas such as leadership, communication, and situational awareness. The assumption is that CRM will improve performance.

The authors evaluated the relationship between CRM behaviors and mission performance among crew from MC-130P aircrews participating in annual simulator training. A strong correlation ($r = .86$) was found between CRM effectiveness and mission performance in the simulator. They also found a positive connection between the quality of mission planning and subsequent performance ($r = .60$).

37. Sullivan, P.J., & Feltz, D. L. (2001). The relationship between intrateam conflict and cohesion within hockey teams. *Small Group Research*, 32(3), 342-355.

Conflict is generally assumed to be counterproductive to cohesion. This study investigates the possibility that the type of conflict might determine the influence it will have on cohesion. The authors studied 62 hockey players utilizing measures to determine cohesion and conflict styles. Higher levels of cohesion were related to greater use of constructive conflict styles. Destructive conflict styles diminished perceptions of task and social cohesion.

38. Watson, W.E., Johnson, L., Kumar, K., & Critelli, J. (1999). Process gain and process loss: Comparing interpersonal processes and performance of culturally diverse and non-diverse teams across time. *International Journal of Intercultural Relations*, 22(4), 409-430.

The influence of diversity upon eventual team outcomes is not readily apparent in the beginning stages of team development. This study compared the team and individual orientation of culturally diverse and non-diverse teams. Performance was used to measure cohesion with these teams. Three evaluation intervals were used in the study. Early evaluations found that diverse teams practiced more individual and less team orientation than non-diverse teams. Task-related feedback and interpersonal interactions gradually improved the performance of diverse teams. By the third evaluation, diverse teams had created a balance of high team orientation while allowing for a reasonable amount of individual orientation. The authors suggest that the diverse teams had learned to utilize diversity to their advantage in terms of performance.

- 39. Zaccaro, S.J., Gualtieri, J., & Minionis, D. (1995). Task cohesion as a facilitator of team decision making under temporal urgency. *Military Psychology*, 7(2), 77-93.**

Research suggests that team processes change when stress is introduced. This research seeks to identify factors that contribute to changes in team processes during periods of temporal urgency. The authors found that high task-cohesive teams devoted more time to planning and information exchange during a planning period and communicated more task-related information during a performance period than low cohesion teams. High task-cohesive, high temporal-urgent teams performed as well or better than teams with low urgency regardless of cohesion level. The authors conclude that task cohesion is critical for improving team decision making under temporal stress.

Appendix D
Command

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Appendix D Annotations

1. Bass, M.B., Avolio, B.J., Jung, D.I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207-218.

Studies have conceptualized leadership as transactional and transformational. Transactional leadership motivates by the promise of rewards for compliance. Transformational leadership motivates member participation by inspiring identification with the leader and the team that persists without immediate reward. Both have been found to be effective and serve a purpose in various contexts.

Bass et al. examined these two leadership styles among 72 platoons. The leadership styles of leaders and sergeants were correlated with unit potency and cohesion. The influence of this relationship upon team performance was evaluated. Information was collected 4 to 6 weeks prior to annual training at Fort Polk and during training.

Findings indicated that both styles served a function in the platoons. Transactional leadership appears to be most responsive to the demands of complex environments that require fast decision-making. Transactional leadership can establish clear standards of performance expectations and lay the base of trust in the leadership and among co-members. Transactional leadership enhanced unit cohesion, potency, and performance when preparing to address challenges and well-trained competitors. Transformational leadership may build upon this base of trust and lead to deep identification with the unit's values, norms, and mission. The assumption is that this deeper level of trust, commitment, and identification will sustain performance over longer periods of time.

Platoon sergeants and platoon leaders were found to demonstrate a blend of transactional and transformational leadership styles. The task is to develop leadership training that reflects a functional integration of transactional and transformational leadership. Further research is suggested to determine how these two leadership styles develop higher levels of potency, cohesion, identification, trust, and performance.

2. Behling, O., & McFillen, J.M. (1996). A syncretical model of charismatic/transformational leadership. *Group & Organization Management*, 21(2), 163-191.

Organizations experience shifts and changes that require adaptation on the part of teams. The team's ability to adapt will be in response to leadership behavior that inspires a sense of stability and efficacy to make transitions. The authors use charismatic/transformational leadership to denote leader behaviors that facilitate team transitions to changing conditions. These behaviors include; a) displays empathy, b) dramatizes the mission, c) projects self-assurance, d) enhances the leader's image, e) assures followers of their competency, and f) provides opportunities for success to be experienced.

Charismatic/transformational leadership is most effective when certain conditions are present. First, psychic distress or anxiety over the team's circumstances can increase member responsiveness to transformational leadership behavior. Second, transformational leaders need to be inspirational by leading from a moral or ethical base that demonstrates organizational values. Third, transformational leaders improve their influence by inspiring a sense of awe in their abilities among team members. Fourth, effective transformational leaders practice empowerment of team members. The authors summarize that transformational leadership is a learnable skill. They suggest that practicing the six behaviors cited in their study will improve the ability of teams to adapt to change.

3. Bender, W.J., & Septelka, D.M. (2002). Teambuilding in the construction industry. *Transactions of AACE International*, 13.1-13.4.

The construction industry combines the efforts of individuals with diverse expertise in a common project. Teamwork is critical in these endeavors. This report provides suggestions for ways to improve teamwork. These strategies include; a) defining team goals, b) establishing respect and trust, c) clarifying member duties, rights, and responsibilities, d) identifying and managing risks, e) monitoring team health, and f) maintaining effective communication. The primary responsibility for teambuilding resides with team leadership.

4. Bliese, P.D., & Castro, C.A. (1999). *Cumulative effects of organizational stressors: Evidence for the buffering hypothesis*. (USAMRMC Technical Report). Ft. Detrick, MD: US Army Medical Research & Material Command. (AD A369 023)

The buffering effects of social support on team performance are the focus of this study. The cumulative effects of role overload and role ambiguity/clarity were examined from the conditions of high or low leader and peer social support during high workload conditions. Participants were 2,273 Soldiers preparing for a training exercise. They were surveyed for perceptions of leadership climate, morale, and well-being.

Findings support the important role leaders play in providing social support in times of stress. Leadership climate proved to be a buffer between role clarity, role overload, and well-being reducing feelings of distress. Conditions of low leader support, where role overload or role ambiguity was high, led to high levels of distress. The authors found that the buffering effect of high leader support is limited to one of the two variables of role overload and role clarity. High support from leaders coupled with high role overload and high role ambiguity resulted in increased levels of distress.

The authors conclude that supportive leadership needs to characterize teams that experience high stress levels. However, they note that there appears to be a threshold connected to the presence of two significant stressors where supportive leadership loses its buffering effect. They suggest that further research needs to be done since supportive leadership is not the solution to all team stressors.

5. Church, A.H., & Waclawski, J. (1998). The relationship between individual personality orientation and executive leadership. *Journal of Occupational & Organizational Psychology*, 71(2), 99-125.

Church and Waclawski examined the relationship between leadership style and personality. They collected information from 253 executive, vice president, and senior level managers in a large multinational corporation. Participants were given the Myers-Briggs Type Indicator (MBTI), the Kirton Adaptation Inventory (KAI), and the Leadership Assessment Inventory (LAI). Questionnaires were administered for reports on executive behavior, measures of personality preferences, and executive practices. The questionnaires included self-report and observations of others.

The findings supported the hypothesis of the authors that personality and leadership style are related. The majority of respondents rated themselves as transformational leaders and the leadership of others to be more transactional in nature. Overall, the indication is that executives perceived to be more innovative or motivation-oriented are more often viewed by others to be transformational. Executives who are more pragmatic and analytical were found to be more transactional. Church and Waclawski suggest this can be an asset for organizations if the transformational leaders generate the ideas and gain the commitment of employees while transactional leaders carry out the tasks necessary for goals to be reached.

6. Deluga, R.J. (1995). The relation between trust in the supervisor and subordinate organizational citizenship behavior. *Military Psychology*, 7(1), 1-16.

The author investigates the leadership behaviors that encourage team members to provide input that goes beyond "the call of duty." Such behavior is also identified as organizational citizenship behavior (OCB). OCB is commonly not recognized by a formal reward system and serves to improve team functioning by addressing current and future dilemmas that can detract from social and task cohesion. The author cites five types of OCB that have been linked with organizational effectiveness including altruism, courtesy, conscientiousness, sportsmanship, and civic virtue. The study found that leaders and teams can reap the benefits of OCBs when team leaders practice fairness and inspire interpersonal trust in the team.

7. Dickson, M.W., Smith, D.B., Grojean, M.W., & Ehrhart, M. (2001). An organizational climate regarding ethics: The outcome of leader values and the practices that reflect them. *Leadership Quarterly*, 12(2), 197-217.

Organizational ethics have an influence upon cohesion and morale. The early founders of organizations often establish ethical standards and these standards help form the organizational climate of teams. Organizational climates are the shared perceptions of policies, practices, and procedures that are rewarded, supported, and expected in that organization. Organizations can encourage stability by rehearsing and reinforcing organizational ethics and policies to ensure clarity. Team members often model organizational ethics when organizational conditions are stable and predictable. Unpredictable conditions or a lack of clarity can motivate members to resort to making decisions based upon personal ethical codes.

Establishing the ethical norms of a team is a leadership responsibility that must not be ignored. The benefits of maintaining clear policies concerning ethical decision-making include enhanced cohesion, improved job satisfaction, organizational commitment, and morale. Central to this issue is enforcement since policy strength is contingent upon consistent policy action.

8. Druskat, V.U., & Pescosolido, A. (2002). **The content of effective teamwork mental models in self-managing teams: Ownership, learning, and heedful interrelating.** *Human Relations*, 55(3), 283-314.

Research suggests that teams benefit when member mental models (i.e., socially constructed theories about how other members will respond) overlap. Self-managing work teams (SMWTs) require mental models that include psychological ownership of team processes and outcomes, a need for continuous learning, and a need for heedful interrelating. The authors propose that mental models are effective as long as there is organizational support for how the team is functioning.

9. Dvir, T., Eden, D., Avolio, B.J., & Shamir, B. (2002). **Impact of transformational leadership on follower development and performance: A field experiment.** *Academy of Management Journal*, 45(4), 735-744.

Leadership research has recognized transformational leadership as a style that merits further consideration. Transformational leadership motivates followers to expend effort beyond expectations of implicit or explicit demands of their membership agreement with the team. Transformational leadership is founded on the domains of motivation, morality, and empowerment. This study examined the relationship between transformational leadership and follower development.

The authors created an experimental and a control group using 54 military leaders. The experimental group was given transformational leadership training. Transformational leadership training stressed pragmatic behaviors that should continuously develop follower motivation, morality, and empowerment. The control group was provided eclectic leadership training over a 3 day period that focused on "here and now" group processes from a psychodynamic focus. The principles taught in both groups were applied to cadet training in light weapons, physical fitness, obstacle course, and marksmanship.

Findings indicated that the experimental teams outperformed the control groups. Transformational leadership does have a positive impact on direct follower development and indirect follower performance. However, the researchers could not identify the specific components that produced the impact. They suggest that future research should focus on the components of transformational leadership and their influence on team performance.

10. Goh, S.C. (1998). **Toward a learning organization: The strategic building blocks.** *SAM Advanced Management Journal*, 63(2), 15-20.

Teams are more likely to be successful when they are provided training opportunities and belong to organizations that are dedicated to learning. The author describes learning

organizations as being skilled at transferring information and providing methods for newly learned information to be put into practice. This requires a commitment from team leadership to provide strategic action so that learning can occur.

Five basic building blocks of learning organizations are presented including; a) clarifying the organizations mission and values, b) providing quality leadership that empowers followers, c) encouraging experimentation and feedback, d) providing an ability to transfer information across organizational boundaries, and e) stressing teamwork and cooperation. Two additional factors that support these building blocks are an effective organizational design that allows for such activity and employees with the necessary skills and competencies to participate in such activities. The author suggests that learning organizations need to periodically measure productivity and performance to see if alterations to their approach are needed.

11. Hirokawa, R.Y., DeGooyer, D., & Valde, K. (2000). Using narratives to study task group effectiveness. *Small Group Research*, 31(5), 573-592.

Narrative feedback can be beneficial in evaluating teams. Findings suggest that three categories emerge when participants describe why teams succeed or fail. These categories include the quality of relationships among members, the emotions felt during team functioning, and the attributes of team members. This study found that 16 percent of group success stories contained a relational theme. The majority of success stories did not identify the quality of relationships as a direct indication of success but as an influence on the behaviors and attitudes necessary for success. Only 6 percent of failure stories blamed relational factors and the vast majority of them blamed member conflicts. Positive emotions and member attributes related to skills and knowledge were also identified with successful teams.

12. Hodson, R. (1997). Group relations at work. *Work & Occupations*, 24(4), 426-452.

Organizations are increasingly relying upon teams. Coworker relationships can influence the interpersonal atmosphere of the team. The author surveyed 371 employed adults and employed a questionnaire composed of open-ended and closed questions that queried respondent perceptions of job satisfaction, solidarity, relations with management, and coworker conflict. Coworker conflict was negatively associated with good relations with management and job satisfaction. High levels of job satisfaction were associated with solidarity. Solidarity was associated with better relations with management. The author concludes that supervisors need to be mindful to encourage solidarity within the teams they lead since this enhances the vertical relationship between members and team leadership.

13. Hoegl, M., & Gemuenden, H.G. (2001). Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. *Organization Science*, 12(4), 435-449.

The teamwork quality (TWQ) approach appears to enhance performance in completing innovative projects. TWQ includes communication, coordination, equitable member contributions, mutual support, effort, and cohesion. The authors' study of 575 software engineers found the TWQ model to be effective to varying degrees depending upon the rater.

Research support for this model suggests it contributes to collaboration efforts. The software engineers reported high personal work satisfaction and that their participation enhanced learning. Leadership roles and styles associated with this model stress collaboration, encouragement, cooperation, communication, and elicit member input. The goal is to encourage member attraction and commitment to the team and the project.

14. Johnson, S.D., & Bechler, C. (1998). Examining the relationship between listening effectiveness and leadership emergence. *Small Group Research*, 29, 452-471.

Teams identify and recognize formal and informal leaders through a process of elimination and competition. Emergent leadership theory suggests that task leaders will emerge in the team if they demonstrate certain behaviors. Members perceived to be inflexible, quiet, unintelligent, uninformed, or possessing undesirable leadership styles are eliminated from consideration.

This study identified a strong, positive relationship between listening behavior and perceptions of leadership. In other words, effective listeners were identified as being leaders. One explanation is that effective listening makes the leader aware of member needs and wants. Evaluations of emergent leaders' behavior occur throughout the elimination process. Emergent leaders reported no greater recall than other members. However, they demonstrated more effective listening behavior and participated in discussions. Poor recall was not reported as negative as long as the person appeared intelligent and informed.

15. Katz, N., & Koenig, G. (2001). Sports teams as a model for workplace teams: Lessons and liabilities. *Academy of Management Executive*, 15(3), 56-69.

Over the last decade many managers have looked to sports teams or sports leaders for advice in how to create and manage workplace teams. This article identifies seven lessons drawn from sports psychology that are applicable to the workplace. These lessons primarily reflect upon leadership responsibility. They include: 1) integrate cooperation and competition; 2) create early wins; 3) find a way to break out of losing streaks; 4) make time for practice; 5) take breaks for performance review; 6) keep team membership stable; and 7) debrief the team. The authors are careful to point out that managers need to be careful how they apply sports models in business because the relational and environmental dynamics are different.

16. Klein, S.M. (1996). Work pressure as a determinant of work group behavior. *Small Group Research*, 27(2), 299-315.

Teams experience stress or pressure when productivity goals are challenging. The effect stress inflicts upon teams is uncertain. One potential outcome is increased bonding between members. Another potential outcome is that production pressure leads to concerns about the self-impact of stress, resulting in destructive behavior such as bickering and scapegoating. A point of agreement is that the leader's response will affect group cohesion under stress conditions.

This study investigated the responses of 1,676 manufacturing employees to the introduction of a new work-measurement system over a 14-month period. Findings supported

the perspective that intra-group competition will increase under stress. The study also found that the response of team leaders determines how the team will respond to increasing pressure. When leaders pass the frustration of increasing pressure along to their team, cohesion begins to suffer. However, if leaders maintain task-focused teamwork, cohesion is maintained and can be enhanced. The author concludes that when supervisors maintain a strong team orientation and are seen as influential in the team, increasing pressure did not diminish cohesion. When supervisors lacked a strong team orientation or influence, increasing pressure impacted the internal dynamics of teams resulting in competitive behavior.

17. Marks, M.A., Mathieu, J.E., & Zaccaro, S.J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, 26(3), 356-376.

Teams develop psychosocial traits over time as interactions occur in the process of accomplishing team tasks. The authors call these traits emergent states. Emergent states are embodied in the cognitive, motivational, and affective characteristics of a team. They manifest in norms, affect, shared mental models, and cohesion. These states develop during distinguishable periods of time where task performance has occurred and feedback is available.

This episodic approach to team processes holds that teams experience action phases and transition phases. Action phases involve action, coordination, and monitoring towards team goals. The transition phase allows for planning and evaluation. During these phases members engage in multidimensional tasks simultaneously. The authors suggest that team leaders need to create teams with as much skills balance as possible. Members should also be empowered to align their strengths depending upon the changing conditions confronting the team.

18. Mumford, M.D., Zaccaro, S.J., Connelly, M.S., & Marks, M.A. (2000). Leadership skills: Conclusions and future directions. *Leadership Quarterly*, 11(1), 155-170.

Much of leadership research has historically approached leadership from a skills-based model. The skills-based model stresses complex problem-solving skills, solution construction skills, and social judgment skills. Leadership in this model is measured by the ability of the individual to reduce uncertainty by resolving ambiguous problems confronting the team through enlisting team members to generate potential solutions. Social skills are important and enable consensus-building by fostering decision-making.

The authors extend the skills-based model by seeking to make suggestions for improving leadership. Their suggestions recognize that leadership involves an interpersonal component. In other words, leadership is accomplished through direct interaction with followers. Positive interpersonal interactions create a sense of bonding between leader and follower.

19. Mumford, M.D., Zaccaro, S.J., Harding, F.D., Jacobs, T.O., & Fleishman, E.A. (2000). Leadership skills for a changing world: Solving complex social problems. *Leadership Quarterly*, 11(1), 11-35.

Leadership is commonly perceived as an interpersonal phenomenon existing between leaders and subordinates. Effective leaders learn to rely on interpersonal skills that foster a

positive interpersonal climate within their teams. A challenge faced by leaders is to learn how to resolve conflicts when they arise. Social conflicts can result from internal disagreements or from external pressure related to changing socio-environmental conditions. Teams desire to maintain stability and their ability to mitigate social pressure within the team will depend upon the leader's ability to maintain clarity of goals and to direct the team in effective strategies to reduce the current tension.

The authors hold that effective leadership ability will be revealed by the leader's response to complex social problems within the team. Their contention is that leadership, in this context, becomes an exercise of skills. The skills identified by this research include problem-solving, social judgment, and social skills. Problem-solving is associated with the leader's ability to identify the problem, understand the problem, and generate potential solutions to the problem. Social judgment involves refining the solutions and creating a framework to implement them within the complex setting of the team. Social skills are the interpersonal attitudes and behaviors that motivate others to participate in the implementation of a solution. Skills development is an organizational concern that merits ongoing training.

- 20. Neubert, M.J. (1999). Too much of a good thing or the more the merrier? Exploring the dispersion and gender composition of informal leadership in manufacturing teams. *Small Group Research*, 30(5), 635-646.**

This study examined the role of informal leaders within teams and the influence gender dispersion can have upon perceptions of team performance. Twenty-one manufacturing teams were utilized consisting of 252 individuals. Questionnaire responses revealed that teams with the greatest number of informal leaders reported the highest cohesion. Teams with more females as informal leaders were positively related to supervisor's ratings of team performance.

- 21. Pescosolido, A.T. (2001). Informal leaders and the development of group efficacy. *Small Group Research*, 32(1), 74-93.**

Group efficacy is a belief in the ability of the group to be successful. High group efficacy often contributes to improved performance. Informal leaders are often present within groups. Their influence can be very significant on the productivity of the group. Pescosolido examined the relationship between informal leaders and group efficacy.

MBA students (n=120) were subjects of a semester-long project. The students were divided into 24 groups of five persons each. Each group chose a topic to research and discuss. They were monitored at the beginning of their scheduled meetings and when a project paper was to be presented at the end of the semester. Questionnaires queried participants to identify a group leader and estimates were made of where the group would fall in a range of scores. Since no leader was assigned, the individual receiving the most votes on the questionnaire was assumed to be the informal leader of the group.

The results indicated that informal leaders played a significant role in helping the groups to begin functioning. They had an effect on decision-making and goal-setting. The author suggests that informal leaders might seek to create collective efficacy in the group that matched the

leader's efficacy beliefs. This effect likely occurred early in the study since the influence of informal leaders was diminished towards the end of the study. Pescosolido posits that informal leaders might have lost influence because the team was functioning at a mutually acceptable level of collective efficacy. Several suggestions are given as to why and how informal leaders are chosen and future research suggestions are offered.

22. Popper, M. (1996). Leadership in military combat units and business organizations: A comparative psychological analysis. *Journal of Managerial Psychology*, 11(1), 15-23.

Military and organizational leaders share similarities in the nature of the leadership relationship with their followers. One perspective is that the relationship between a leader and those led is simply an exchange-based arrangement where the follower receives desired rewards in exchange for compliance. The second perspective is that the leader-follower relationship is essentially emotional and leadership is based upon the ability to motivate and inspire followers even in the absence of immediate reward. The author presents an alternative explanation for the leadership-follower relationship.

The author posits that the leadership-follower relationship is based upon a psychoanalytic framework of transference, attribution, and projection. The transference suggestion is based upon the premise that individuals have a repressed desire for an authority figure in their lives that will function as a type of "parent" while offering security and helping to construct a sense of well-being. Attribution is the innate response of individuals seeking someone of competence to assume control under conditions of uncertainty and leaders are expected to make sense of the situation. The projection explanation is that individuals seek leadership that embodies what they aspire to be and the leader serves as a vicarious means for them to achieve their personal goals.

The author concludes that leaders and organizations need to be aware of the psychodynamic motivations that can disrupt their teams. Organizations are different and each requires its own type of leadership and possesses its own set of desired expectations and outcomes. Stressing the nature and expectations of teams to team members represents one way of mitigating breakdowns in productivity.

23. Ryska, T.A., & Cooley, D. (1999). Developing team cohesion: A comparison of cognitive-behavioral strategies of U.S. and Australian sport coaches. *Journal of Psychology*, 133(5), 523-539.

Coaches play a primary role in developing team cohesion. However, little research has been reported identifying the specific cognitive-behavioral strategies demonstrated by successful coaches and how situational factors influence the strategies they use. This study included 196 Australian coaches and 162 coaches from the United States. The coaches represented various types of teams. The authors define cohesion in terms of social and task cohesion. Athlete integration represented players' feelings of belonging and connectedness with the team. Role development stressed strategies and behaviors that promote goals accomplishment.

Findings indicate that a team's environment and context determines the strategies used by coaches. Australian coaches tend to emphasize athlete integration. They are accepting of

individual differences, help satisfy player needs within the team context, and gain greater understanding of each athlete. Australian coaches expressed the belief that fostering a sense of acceptance and social affiliation is the best way to maintain athlete retention, performance, and motivation. U.S. coaches were found to promote role development more than Australian coaches. Role development was accomplished through emphasizing team ownership with the players, an increased awareness of team duties, and cooperative team training. Specific factors that determine social cohesion strategies were culture, coach gender, sport type, and the competitive level of the team.

24. Shields, D.L.L., & Gardner, D.E. (1997). The relationship between leadership behaviors and group cohesion in team sports. *Journal of Psychology*, 131(2), 196-210.

Leadership behaviors can exert a significant influence upon cohesion development. The authors explore Chelladurai and Carron's, Multidimensional Model of Leadership (MML). MML holds that athletes' performance and satisfaction are a function of the congruence among contextually required, actual, and preferred leadership behaviors. Further application of MML resulted in the Leadership Scale for Sports (LSS). LSS builds upon dimensions including training and instruction, democratic and autocratic behavior, positive feedback, and social support.

Shields and Gardner studied 189 baseball players and 118 softball players to examine the relationship between leader behavior and cohesion. The strongest relationship was found to be between leader behavior and task cohesion. High task cohesion appears to be related to leadership styles that encourage training and instruction, provide social support, avoid autocratic decision-making, demonstrate democratic behavior, and model positive feedback. The authors conclude that group cohesion efforts are enhanced when there is congruence between preferred and actual leadership behavior.

25. Steckler, N., & Fondas, N. (1995). Building team leader effectiveness: A diagnostic tool. *Organizational Dynamics*, 23(3), 20-35.

Leader ineffectiveness will detract from team performance. Steckler and Fondas suggest that effective leadership consists of skills that are organizational, behavioral, and psychological in nature. These skills include the ability to communicate effectively, to use incentives, to manage team dynamics and team goals, and to relate with and inspire the trust of followers. Potential leadership problems are explored and suggestions are made for ways organizations can improve the abilities of their leaders to be more successful.

26. Thomas, J.L., Dickson, M.W., & Bliese, P.D. (2001). Values predicting leader performance in the U.S. Army Reserve Officer Training Corps Assessment Center: Evidence for a personality-mediated model. *The Leadership Quarterly*, 12, 181-196.

Leadership studies have examined the impact of personality on leadership styles and effectiveness. This study seeks to examine the interrelationship between leader values, motives, personality, and rated performance at a military assessment center used by Reserved Officer

Training Corps (ROTC) cadets. The leader motive pattern (LMP) was used to measure power and affiliation orientations.

The study included 818 ROTC cadets from 150 colleges and universities. The majority (61%) had no prior military experience. Participation was voluntary and respondents were assigned questionnaires to complete during the initial days of advanced training. Inventories included the Motives, Values, and Preferences Inventory (MVPI) and the Hogan Personality Inventory (HPI).

The authors found that extraversion emerged as a significant personality factor in determining leadership success. Extraversion partially mediated the relationship between power and cadet leadership assessment while fully mediating the relationship between affiliation and cadet leadership assessment. Individuals with a high need for affiliation were found to rate the highest in extraversion and those highest in extraversion generally received the highest leadership ratings. The authors conclude that individual values exert an indirect influence on leadership effectiveness.

27. Turman, P.D. (2003). Coaches and cohesion: The impact of coaching techniques on team cohesion in the small group sport setting. *Journal of Sport Behavior*, 26, 86-104.

Team relationships can elicit or deter cohesion in sports teams. This study found that player relationships were a crucial factor in determining how behaviors were interpreted. Sarcasm, bragging, and teasing were reported to be inclusive if player relationships were positive. Bragging about the ability of players was seen as a positive strategy for modeling desired behavior. Inequity, embarrassment, and ridicule were determined to be isolating when practiced by coaches. The players reported that team prayer before the game helps to mitigate feelings of separation and prejudices.

28. VandeWalle, D., Challagalla, G.N., Ganesan, S., & Brown, S.P. (2000). An integrated model of feedback-seeking behavior: Deposition, context, and cognition. *Journal of Applied Psychology*, 85(6), 996-1003.

Trust in team leadership is assumed to serve a positive influence on team performance. The authors reviewed the research related to theories of trust and attribution theories of leadership. This study of men's college basketball teams found that trust in leadership was a result of performance and a determinant of future performance.

29. Voight, M., & Callaghan, J. (2001). A team-building intervention program: Application and evaluation with two university soccer teams. *Journal of Sport Behavior*, 24(4), 420-431.

The authors of this study evaluated the reported effectiveness of teaching a team building approach to two soccer teams. The teamwork building program included: a) shared vision; b) collaborative and synergistic teamwork; c) individual-team accountability; d) team identity; e) positive team culture and cohesiveness, and; f) open and honest communication. Both teams

rated the teamwork-building program as "helpful" (means of 2.8 and 3.1) in enhancing individual performance and "very helpful" (means of 3.1 and 3.9) in enhancing team performance. They also rated the program "very helpful" (means of 3.1 and 3.5 respectively) in improving team unity. The authors conclude that coaches would likely be even more effective in teaching teamwork building, because the players would feel more invested in the program.

30. Widmeyer, W.N., & Ducharme, K. (1997). Team building through team goal setting. *Journal of Applied Sports Psychology*, 9(1), 97-113.

Coaches and sport psychologists are frequently called upon to provide training designed to enhance teamwork. One strategy is to encourage teamwork through implementing a team goal-setting program. The authors suggest that a team goal-setting program should: a) establish long-term goals first, b) establish clear paths to long-term goals, c) involve all team members in establishing team goals, d) monitor team progress toward team goals, e) reward team progress toward team goals, and f) foster collective efficacy concerning the accomplishment of team goals.

31. Zaccaro, S.J., Rittman, A.L., & Marks, M.A. (2001). Team leadership. *Leadership Quarterly*, 12, 451-483.

Team leaders are responsible to see that group needs are adequately met. Leadership is defined as social problem-solving. In this context leaders diagnose problems that threaten team performance, generate appropriate solutions, and implement solutions in a contextually relevant way. The authors suggest that leaders play a cognitive, motivational, affective, and coordination role in teams. Leadership processes are identified as sense-making, sense-giving, identifying problem needs, planning, meta-cognitive prompting, developing team members, and motivating team members. Leader goals include: (a) to create shared mental models of information; (b) to promote task cohesion; (c) to enhance collective efficacy in the team; (d) to address affective needs through feedback and monitoring, and; (e) to provide coordination through member role assignments and decisive responses to changing conditions.